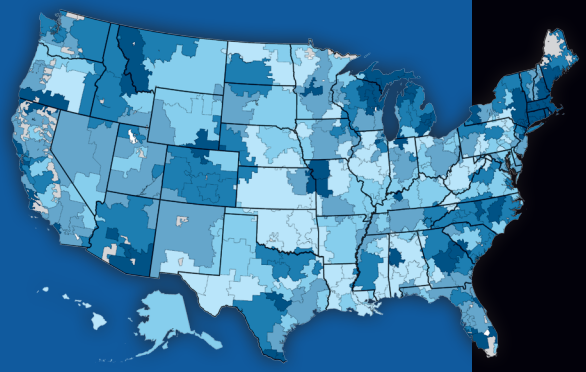

Our Parents, Ourselves: Health Care for an Aging Population

A Report of the Dartmouth Atlas Project

THE JOHN A. HARTFORD FOUNDATION · 1929 ·

THE Dartmouth INSTITUTE FOR HEALTH POLICY & CLINICAL PRACTICE

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Our Parents, Ourselves: Health Care for an Aging Population

Preface

For decades, health services researchers have studied geographic variation in the delivery of health care services. Steady progress has been made in understanding unwarranted variation and documenting underuse of effective care, misuse of preference-sensitive care, and overuse of supply-sensitive care. It is now evident that certain strategies, such as improving care continuity and instituting high-quality shared decision-making, can improve the care experience for patients.

The health care experience of older Americans varies extensively across the United States. The 1999 edition of the Dartmouth Atlas highlighted striking geographic differences in the use of inpatient care, outpatient care, physicians' services, and care at the end of life across hospital referral regions (HRRs). HRRs represent regional health care markets, each of which contains at least one hospital that performs major cardiovascular procedures and neurosurgery. Total Medicare reimbursements were more than twice as high in the Miami HRR as in the Minneapolis HRR. For our nation's seniors, as indeed for all of us, geography is destiny.

This edition of the Dartmouth Atlas examines health care for older Americans with an emphasis on the patient's perspective. For the first time, we measure the intensity of care in terms of how many days per year the average Medicare beneficiary is in contact with the health care system. We can see that beneficiaries in some regions see twice as many unique clinicians for ambulatory care than in others. We also can see in which regions beneficiaries are more likely than not to have a primary care physician as their predominant provider of care.

We also examine the adoption of new evidence-based practices to show that, while some regions showed substantial progress, others still fall short. For example, in some regions, fewer seniors are being prescribed inappropriate high-risk medications, and in others, thirty-day readmission rates are falling. Yet screening tests for prostate cancer and breast cancer among beneficiaries 75 and older remain unnecessarily high, and the data in this report suggest that we are still waiting too long to refer patients to hospice care.

Older Americans have always faced special challenges in the ways they experience care. For some of the measures presented, we are still learning which rate is "right." We hope that the information in this report will stimulate further inquiry into the care received by older adults across the United States and motivate practice change where it is needed.

John E. Wennberg, MD, MPH

Introduction

It is well known that the United States population is aging. According to the most recent data from the U.S. Census, the number of Americans age 65 and older is expected to nearly double over the next four decades, from 43.1 million in 2012 to 83.7 million by 2050. Over the same time period, the number of people age 85 and older is projected to nearly quadruple, from 5.8 million to 19 million. The trend is driven mainly by the aging Baby Boomer population, as well as by increasing life expectancy.

The implications of this shift on the organization and delivery of health care, however, are less well understood. Researchers predict an increased need for chronic care to match the needs of older people with one or more chronic conditions. Care coordination and planning will become increasingly important as aging adults visit more providers across more settings. An aging population will also create new opportunities for organizations to align care with patient preferences and refocus attention on quality improvement programs that follow age-specific guidelines for treatment and screening. Closer inspection of how these themes may develop across the U.S. is warranted.

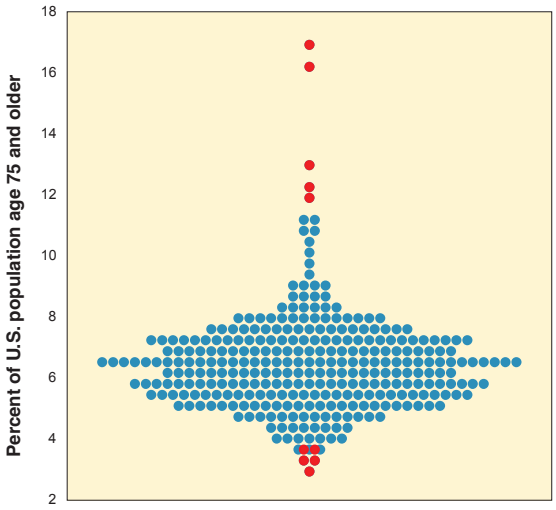
Using Medicare claims data, this report examines the demographics of older adults, including age, race, enrollment status, and other characteristics, to understand who are the older adults of today in the U.S. It explores the care experienced by this population, looking at the number and types of care providers they see, along with the frequency with which they have contact with the health care system. It identifies areas in which patient-centered improvements are most needed for older patients, as well as recognizes areas in which those improvements are already under way. Finally, it notes the distinctive challenges and opportunities presented by special populations, including people with multiple chronic conditions and dementia.

Who Are the Older Adults in American Health Care?

For demographers, an "aging population" means that the proportion of a population above a certain age is increasing. The United States is experiencing rapid growth in its older population. According to the U.S. Census Bureau, there were an estimated 19.2 million Americans age 75 or older in 2012, accounting for approximately 6.1% of the total population.[1] This figure is projected to reach 23.2 million (6.9%) by the year 2020, and 34.2 million (9.5%) by 2030.[2] Driven largely by the aging of the Baby Boomer generation, this trend is not expected to slow until at least 2035.

Americans Age 75 Years and Older

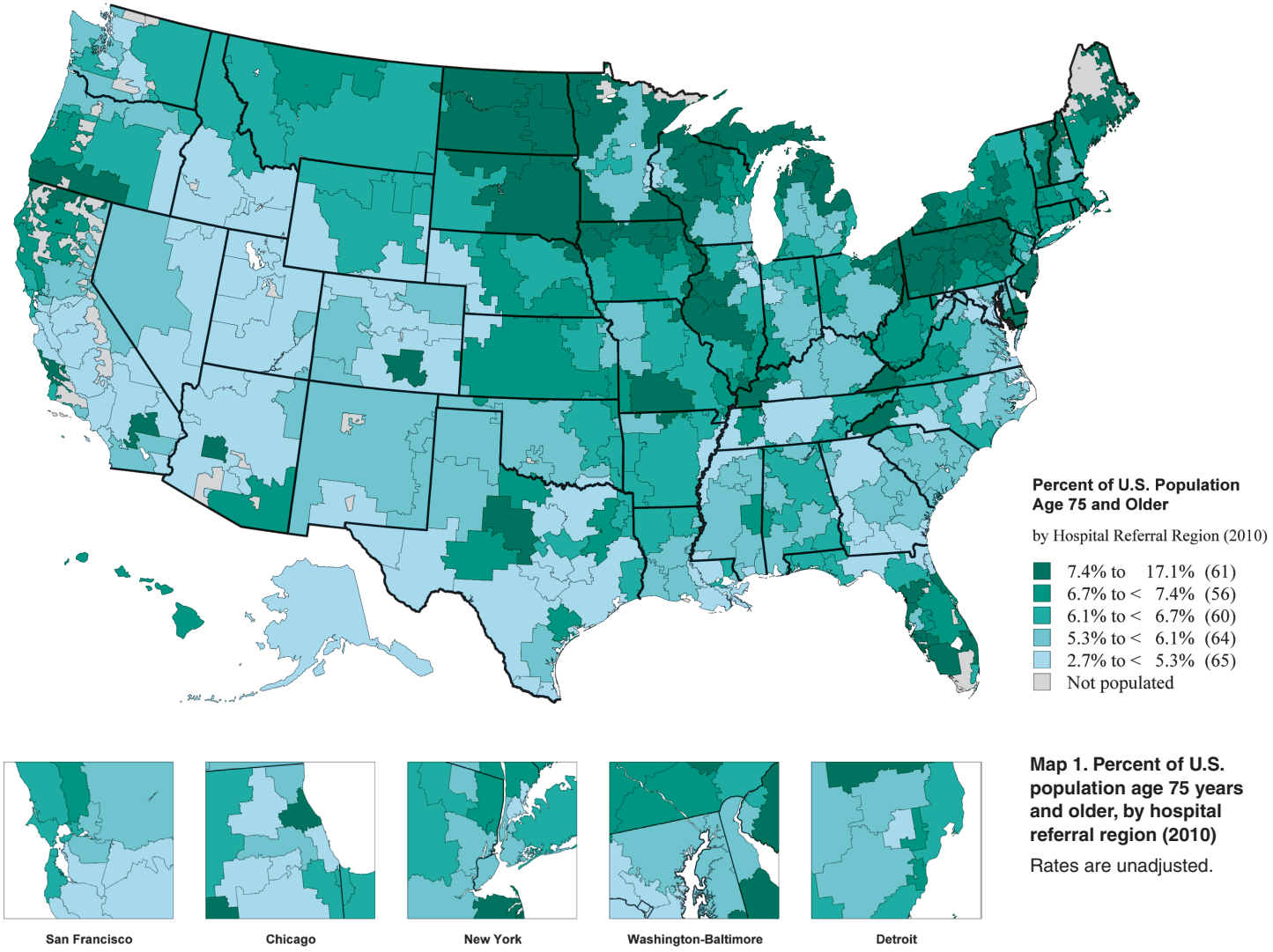
In general, older Americans are geographically dispersed across the country; the vast majority of hospital referral regions (HRRs) had 75-and-older populations that ranged from 4% to 8% in 2010. The national average was 6%. Regions in the Northeast and upper Midwest tended to have older populations than the rest of the country, as did certain warm-weather retirement destinations (Map 1). Eleven HRRs, located mainly in Florida and Arizona, had 75-and-older populations higher than 10% in 2010, including Sun City, Arizona (17.1%) and Sarasota, Florida (16.2%). The percentage of the population age 75 and older was much lower—about 3%—in Anchorage, Alaska (2.8%) and Provo, Utah (3.1%) (Figure 1).



Sun City, AZ	17.1%
Sarasota, FL	16.2%
Ocala, FL	13.1%
Hudson, FL	12.2%
Clearwater, FL	11.9%
U.S. average	**6.0%**
Austin, TX	3.6%
Arlington, VA	3.5%
Aurora, IL	3.4%
Provo, UT	3.1%
Anchorage, AK	2.8%

Figure 1. Percent of U.S. population age 75 years and older, by hospital referral region (2010)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of people age 75 and older in their respective regional populations according to the 2010 U.S. Census. Rates are unadjusted.



Map 1. Percent of U.S. population age 75 years and older, by hospital referral region (2010)

Rates are unadjusted.

Sun City and the "Active Adult" Retirement Community

Sun City is an unincorporated town in southwestern Arizona. It was founded in 1960 by real estate developer Del Webb, who had an early vision for an age-restricted community that would promote healthy lifestyles and active living for seniors and would potentially serve as an alternative to nursing homes.[3] Today, such communities are home to more than one in six U.S. retirees.

Age-restricted communities such as Sun City market an active, social lifestyle that promotes overall health. In 1999, the Dartmouth Atlas reported that residents of Sun City made far fewer trips to the ICU in the last six months of life than adults living in the rest of the country, with no negative effect on their outcomes (www.dartmouthatlas.org/pages/multimedia). In 2012, 17.1% of the population of Sun City was age 75 or older, making it the HRR with the highest percentage of older beneficiaries.

Geographic Distribution of Medicare Beneficiaries by Race

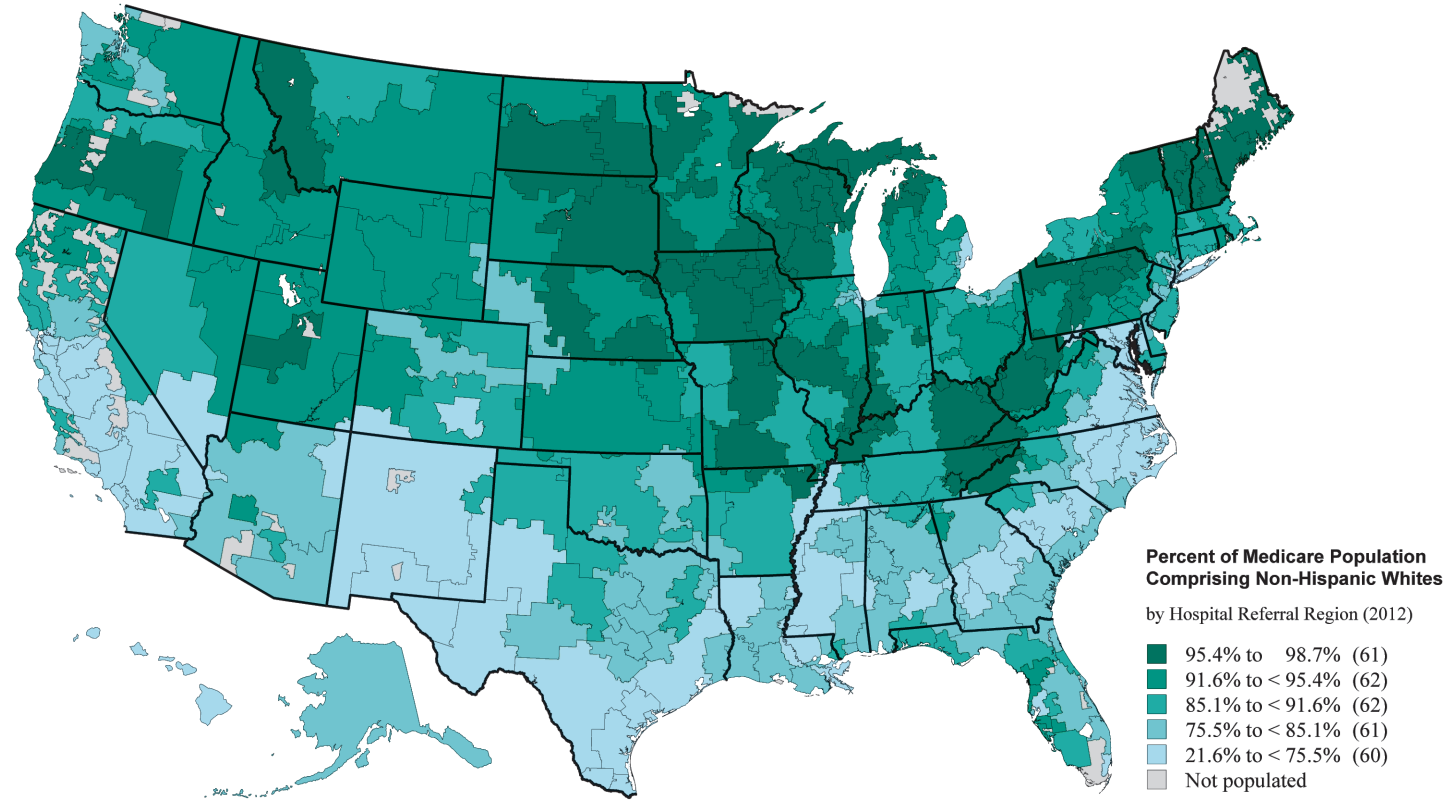
Older Americans have become more racially and ethnically diverse over the past decade. Of the 40.3 million people age 65 and older in 2010, 84.8% identified as White alone, compared to 86.9% in 2000.[1] Understanding how racial and socio-economic factors differ across regions can help identify where efforts to reduce disparities in health status and mortality might have their largest impact. Disparities in health care can be the result of differences in quality across the hospitals and physicians from which people of different backgrounds receive treatment, or of unequal treatment within a hospital or by a given provider.

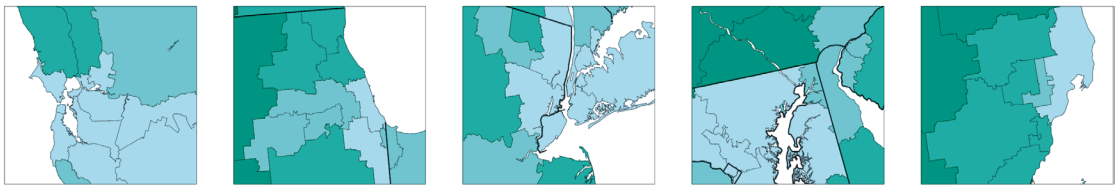
Table 1. Hospital referral regions with the 20 highest Black and Hispanic Medicare populations (2012)

HRRs with Highest Black Populations		HRRs with Highest Hispanic Populations	
HRR	Percent Black	HRR	Percent Hispanic
New Orleans, LA	39.5%	McAllen, TX	77.3%
Chicago, IL	38.7%	Harlingen, TX	72.6%
Albany, GA	34.8%	El Paso, TX	58.3%
Florence, SC	33.8%	Miami, FL	56.3%
Jackson, MS	32.8%	Corpus Christi, TX	44.5%
Detroit, MI	30.9%	San Antonio, TX	39.4%
Columbus, GA	30.8%	Bronx, NY	39.4%
Bronx, NY	30.3%	Odessa, TX	29.0%
Memphis, TN	29.5%	Fresno, CA	26.5%
Takoma Park, MD	29.3%	Albuquerque, NM	25.9%
Meridian, MS	28.5%	Bakersfield, CA	25.6%
Montgomery, AL	27.9%	Los Angeles, CA	25.4%
Washington, DC	27.8%	Pueblo, CO	24.4%
Columbia, SC	27.3%	San Bernardino, CA	23.2%
Augusta, GA	26.5%	Salinas, CA	22.9%
Macon, GA	25.9%	Victoria, TX	21.1%
Shreveport, LA	25.5%	Lubbock, TX	20.3%
Newark, NJ	25.2%	Stockton, CA	20.0%
Baton Rouge, LA	24.8%	San Diego, CA	19.9%
Norfolk, VA	24.4%	Modesto, CA	19.2%

Rates are unadjusted.

Among the Medicare populations age 65 and older living in the 306 hospital referral regions in the U.S., those in the Southern states were the least White in 2012. The percentage of the population that identified as White was less than 85% in much of the South, and less than 75% in many regions (Map 2). Non-White Medicare beneficiaries in the Southeast were primarily Black, while non-White beneficiaries in the Southwest identified predominantly as Hispanic (Table 1). There were 17 HRRs with Medicare populations comprising less than 60% White beneficiaries in 2012, including McAllen, Texas (21.7%), the Bronx, New York (26.0%), Honolulu, Hawaii (26.1%), and Harlingen, Texas (26.3%). The Medicare enrollees living in Dubuque, Iowa (98.6%), Altoona, Pennsylvania (98.5%), and Mason City, Iowa (98.4%) were predominantly White in 2012. The national average was 80.8%.



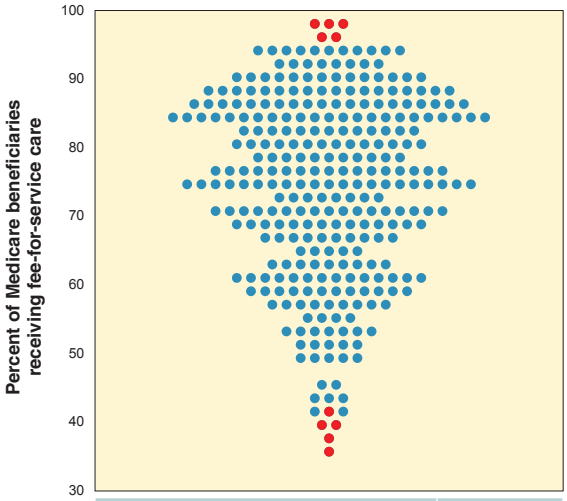


Map 2. Percent of Medicare beneficiaries whose race was non-Hispanic White, by hospital referral region (2012)

Rates are unadjusted.

Fee-for-Service Care for Medicare Beneficiaries

Most Medicare beneficiaries are enrolled in fee-for-service Medicare. However, over the last decade, enrollment in Medicare private health plans (Medicare Advantage), an alternative to fee-for-service, has increased significantly. In 1999, there were 6.4 million beneficiaries enrolled in private plans, but this enrollment increased to 11.7 million by 2011—when it accounted for more than one in four Medicare beneficiaries (26%)—and has continued to rise.[4] Yet the expansion has not been uniform across the United States, with many hospital referral regions remaining in the fee-for-service market.

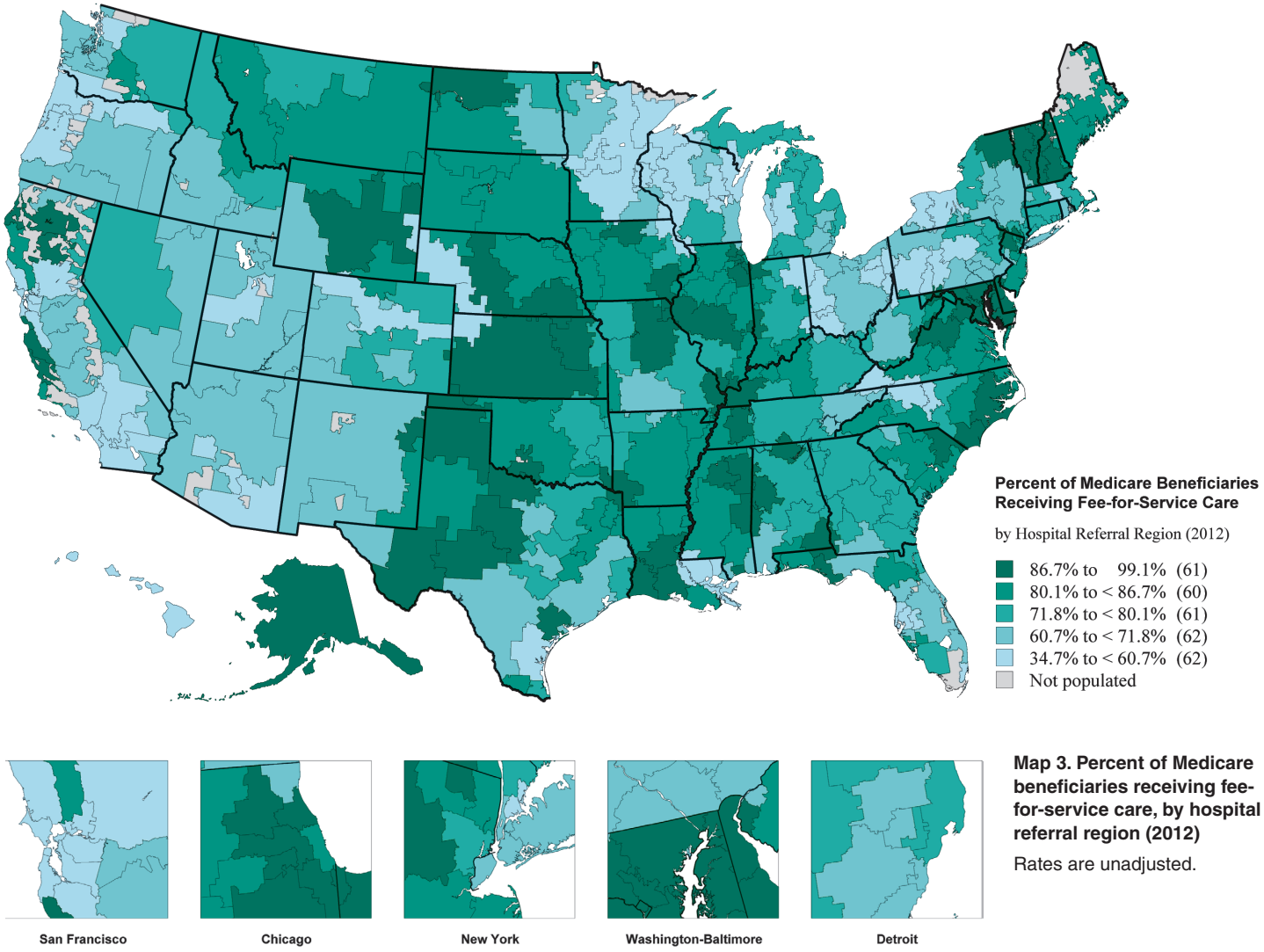


Anchorage, AK	99.0%
Salinas, CA	98.6%
Chico, CA	97.3%
Mason City, IA	96.5%
Salisbury, MD	95.4%
U.S. average	**70.7%**
San Bernardino, CA	40.6%
Salem, OR	40.1%
Pittsburgh, PA	39.4%
Rochester, NY	37.7%
Johnstown, PA	34.7%

Figure 2. Percent of Medicare beneficiaries receiving fee-for-service care, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of Medicare beneficiaries who received fee-for-service care in 2012. Rates are unadjusted.

In 2012, 70.7% of Medicare beneficiaries were enrolled in fee-for-service care, but there was large variation across hospital referral regions. Thirty-three of the 306 HRRs in the U.S. had more than 90% of their Medicare beneficiaries under fee-for-service care in 2012, including Anchorage, Alaska (99.0%), Salinas, California (98.6%), Chico, California (97.3%), and Mason City, Iowa (96.5%), while 16 HRRs had less than 50% receiving fee-for-service care, including Johnstown, Pennsylvania (34.7%), Rochester, New York (37.7%), and Pittsburgh, Pennsylvania (39.4%) (Figure 2). Fee-for-service care was most prevalent among HRRs on the East Coast and in the Midwest and less prevalent in the Southwest and in a few notable states such as Pennsylvania, Minnesota, and Utah, in which there are large and well-known integrated delivery systems (Map 3).



Map 3. Percent of Medicare beneficiaries receiving fee-for-service care, by hospital referral region (2012)

Rates are unadjusted.

What is Medicare Fee-for-Service?

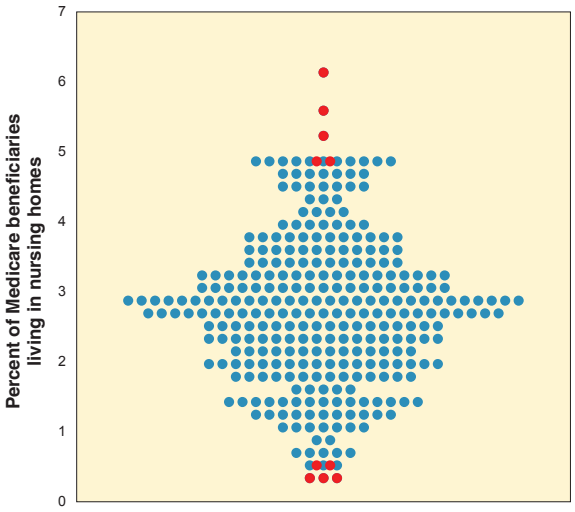
Medicare is a federal health insurance program run primarily for people age 65 and older. Certain people under 65 with disabilities can also qualify, as can people with end-stage renal disease. The basic program, called Original Medicare, offers hospital insurance and insurance for doctors' services, and pays health care providers a fee for each service they provide. This is referred to as a fee-for-service model.

Starting in the 1970s, Medicare beneficiaries were given the option to receive their benefits through private health plans that contracted with the government. This option, called Medicare Advantage, allows for a variety of health plan companies to provide coverage, including Health Maintenance Organizations, Preferred Provider Organizations, private fee-for-service plans, and others. Companies that provide these benefits receive a fixed monthly payment from Medicare for each beneficiary they cover. This is referred to as a capitated model.

Researchers are interested in how fee-for-service and capitated models perform in comparison to one another because there can be unwarranted variations in both cost and quality, often driven more by the availability of resources than by clinical evidence or population need. Fee-for-service environments are thought to exacerbate this problem, yet many markets remain predominantly fee-for-service.

Medicare Beneficiaries Living in Nursing Homes

Nursing homes provide a high level of nursing-based supportive care for people who depend on others for assistance with functional activities such as eating, toileting, and bathing, as well as a safe environment for people with severe cognitive impairment. According to the U.S. Census Bureau, the number of Americans age 65 and older living in nursing homes fell more than 18% between 2000 and 2012, from 1.6 million to 1.3 million.[1] Some researchers believe that new construction of residential care facilities during this period allowed many older adults to opt for other assisted living arrangements and temporarily stay out of nursing homes.[5,6] Still, in 2012, the daily-use rate for nursing homes (26 people per 1,000 population age 65 and older) was greater than the daily-use rate for residential care communities (15 per 1,000) and adult day services centers (4 per 1,000) combined.[7]

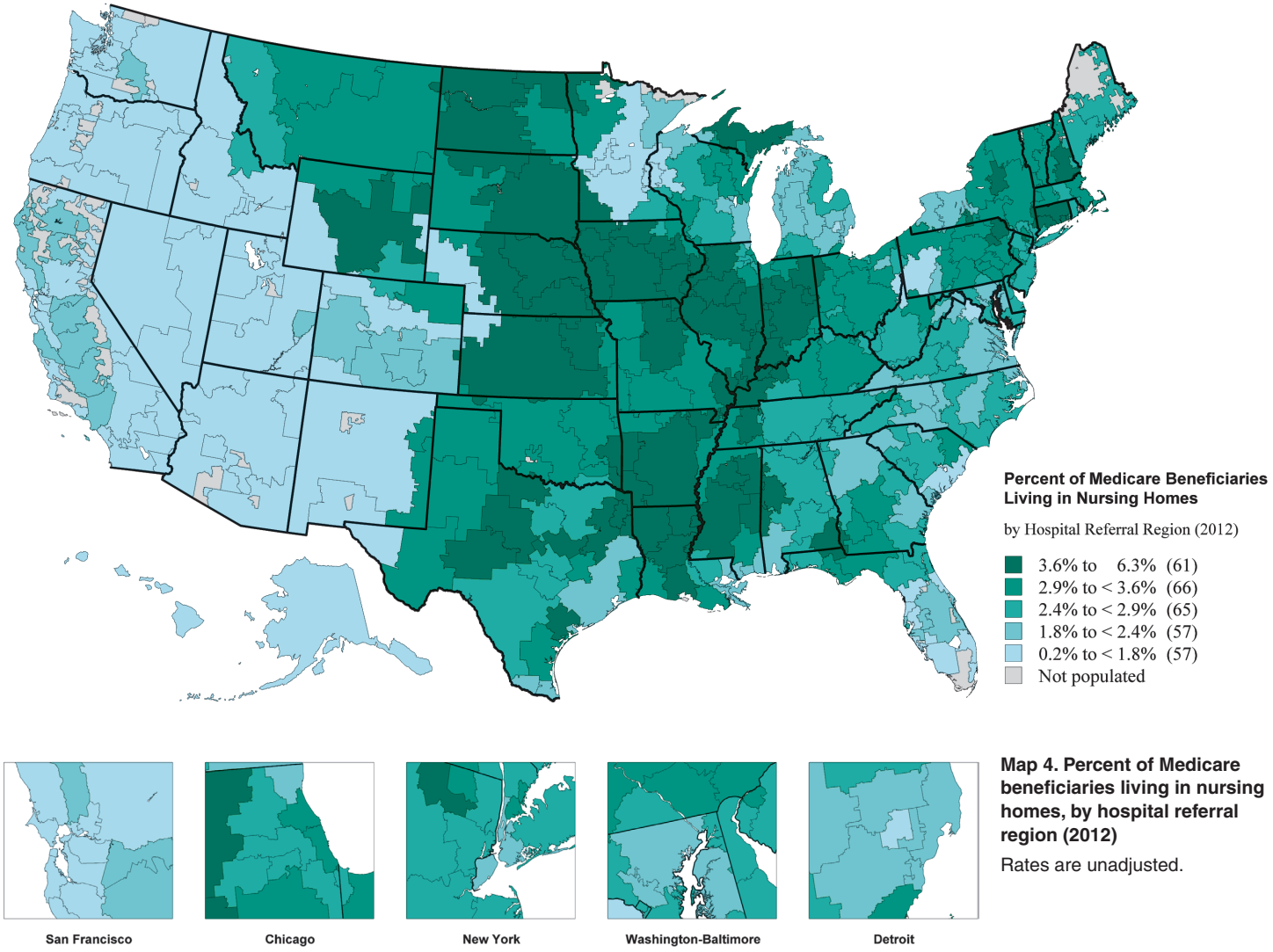


Mason City, IA	6.2%
Bismarck, ND	5.6%
Des Moines, IA	5.2%
Alexandria, LA	4.9%
Victoria, TX	4.9%
U.S. average	**2.5%**
Eugene, OR	0.5%
Salem, OR	0.5%
Mesa, AZ	0.3%
Bend, OR	0.3%
Sun City, AZ	0.2%

Figure 3. Percent of Medicare beneficiaries living in nursing homes, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of Medicare beneficiaries living in nursing homes in 2012. Rates are unadjusted.

Many beneficiaries use a nursing facility briefly for rehabilitation, but the people who stay for at least 100 days are considered to be long-term residents of nursing homes. In most hospital referral regions across the country, the proportion of Medicare beneficiaries who were long-term residents of a nursing home was between 2% and 4% in 2012, with an average of 2.5% nationwide. The proportion of Medicare beneficiaries living in nursing homes exceeded 5% in three HRRs: Mason City, Iowa (6.2%), Bismarck, North Dakota (5.6%), and Des Moines, Iowa (5.2%). Nine of the ten regions with the lowest rates of nursing home residence were in Arizona and Oregon (Figure 3). Although the range was narrow, geographic variation was still detectable; nursing home usage was highest in HRRs in the rural Midwest and considerably lower on the West Coast. Major metropolitan areas such as San Francisco, Washington D.C., and Detroit were not particularly high areas for nursing home living (Map 4).

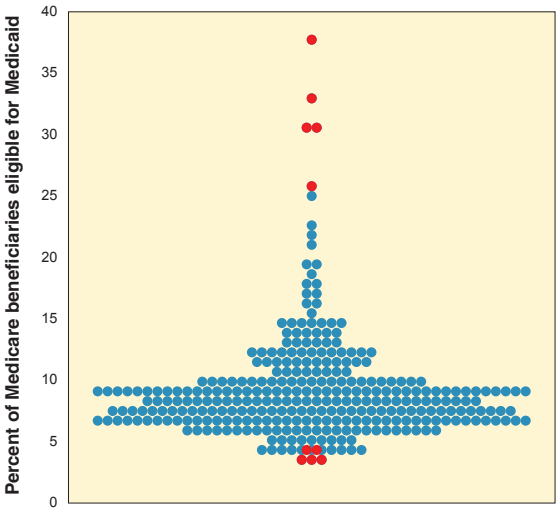


Map 4. Percent of Medicare beneficiaries living in nursing homes, by hospital referral region (2012)

Rates are unadjusted.

Medicare Beneficiaries who are Eligible for Medicaid

Nearly 10 million Americans are fully eligible for both Medicare and Medicaid and are often referred to as "dual-eligible" beneficiaries. Beneficiaries qualify for Medicaid on the basis of low income, and many dual-eligibles have complex health and functional support needs.[8] It is also common among older dual-eligibles to have both medical conditions and cognitive impairment; among dual-eligibles over age 80, half have both medical and cognitive issues.[9] As a result, for this population, health care service use is high, care coordination can be challenging, and the need for long-term care is common.[10]

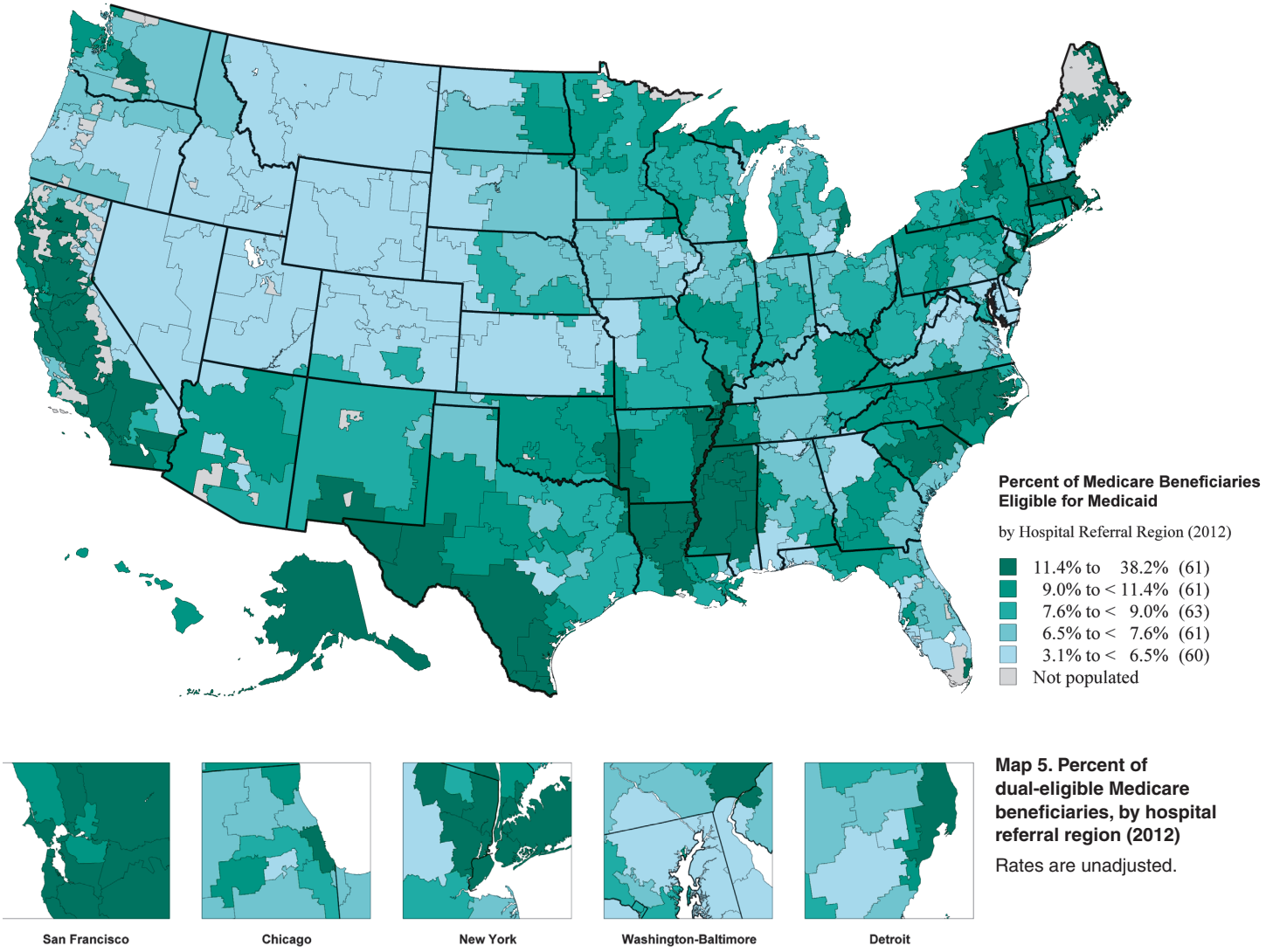


Bronx, NY	38.1%
McAllen, TX	33.0%
Harlingen, TX	30.9%
Manhattan, NY	30.9%
Los Angeles, CA	26.1%
U.S. average	**10.2%**
Fort Myers, FL	4.0%
Provo, UT	4.0%
Sun City, AZ	3.7%
Ocala, FL	3.4%
Sarasota, FL	3.1%

Figure 4. Percent of dual-eligible Medicare beneficiaries, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of Medicare beneficiaries who were eligible for Medicaid in 2012. Rates are unadjusted.

Because Medicaid is a federal and state program, Medicaid eligibility criteria vary by state, which may drive some of the geographic variation. In the majority of hospital referral regions, between 7% and 15% of the Medicare population was also eligible for Medicaid in 2012, with an average dual-eligible population of 10.2%. Nine HRRs had dual-eligible Medicare populations of 20% or more, including the Bronx, New York (38.1%), McAllen, Texas (33.0%), Harlingen, Texas (30.9%), and Manhattan, New York (30.9%). Less than 5% of the Medicare population was eligible for Medicaid in 18 regions, including Sarasota, Florida (3.1%), Ocala, Florida (3.4%), Sun City, Arizona (3.7%), and Provo, Utah (4.0%) (Figure 4). Dual-eligibles comprised a higher percentage of the Medicare population in regions in the South and Southwest and in California. Regions in the Midwest and Mountain states had relatively low percentages of dual-eligible beneficiaries (Map 5).



Map 5. Percent of dual-eligible Medicare beneficiaries, by hospital referral region (2012)

Rates are unadjusted.

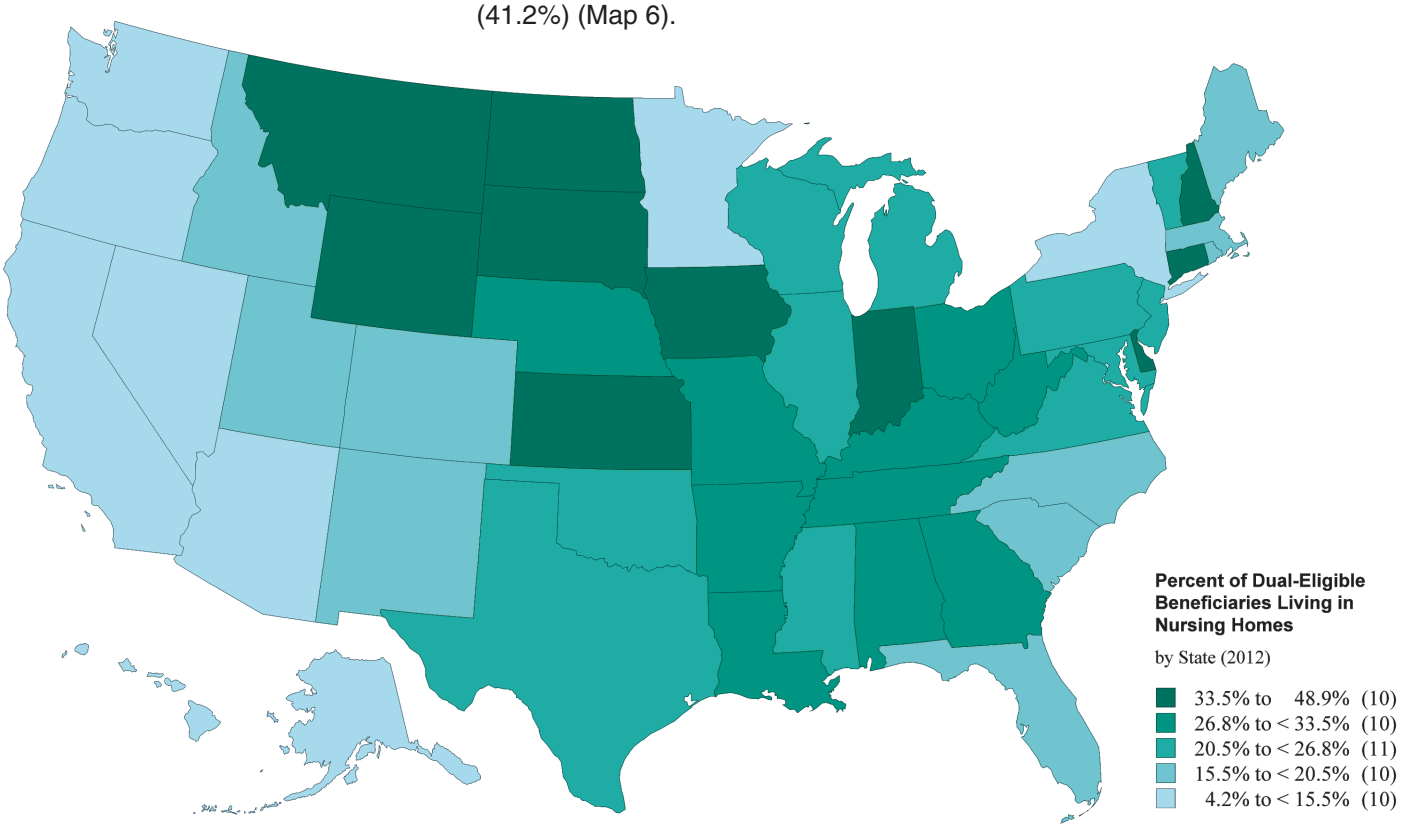
Who are the Elderly Dual-Eligibles?

Dual-eligibles receive help from both Medicaid and Medicare to pay for health services. Nearly all Americans become eligible for Medicare automatically at age 65, but the poorest Medicare beneficiaries often qualify for Medicaid to help pay for costs not covered by Medicare. For all dual-eligibles, Medicaid pays for cost sharing in the Medicare program. These analyses focus on the subset of elderly dual-eligibles with full Medicaid eligibility. For full dual-eligibles, Medicaid also covers long-term services and supports not covered by Medicare, such as long-term care in a nursing home, or home and community based services like case management or personal care services.

Medicare Beneficiaries who are Dual-Eligible and Living in Nursing Homes

Over half of nursing home residents are dual-eligible for Medicare and Medicaid.[11] Organizing care for this population is complex, as payments for services are split across Medicare (covering acute services) and Medicaid (covering long-term care and out-of-pocket expenses). States share Medicaid costs with the federal government and have taken different approaches to managing the high cost of long-term care. Some options include controlling the number of beds and introducing other non-institutional services, which can influence the proportion of dual-eligible beneficiaries residing in nursing homes.

In 2012, there was more than tenfold variation across states in the proportion of dual-eligible beneficiaries who were long-term residents of nursing homes. Less than 10% of dual-eligible beneficiaries lived in nursing homes in six states: Arizona (4.3%), Alaska (6.0%), Minnesota (6.1%), Oregon (6.2%), Hawaii (6.4%), and California (6.8%). The rate exceeded 40% in five states: New Hampshire (48.9%), South Dakota (45.2%), Wyoming (43.9%), North Dakota (43.3%), and Kansas (41.2%) (Map 6).



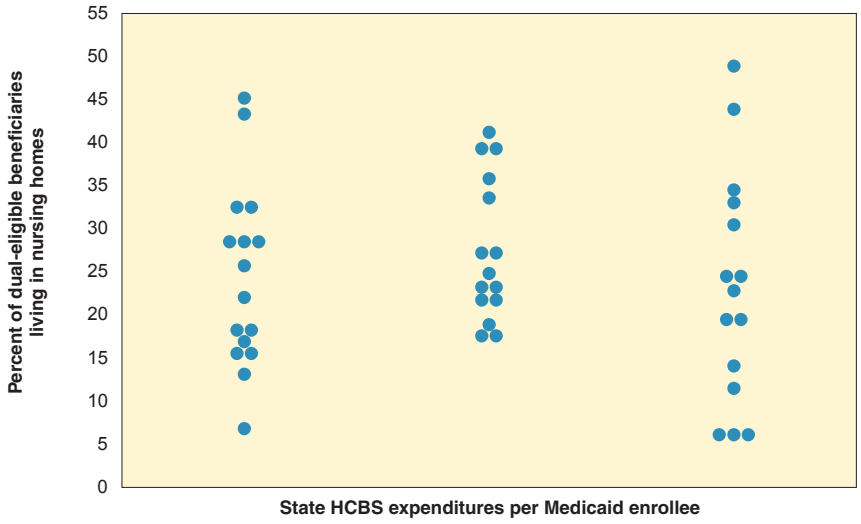
Map 6. Percent of Medicare beneficiaries who were dual-eligible and living in nursing homes, by state (2012)

Rates are unadjusted.

Home and Community-Based Services Investments and Nursing Home Use among Dual-Eligibles

Home and community-based services (HCBS) are an example of alternative long-term care strategies that include specialized services that seniors and individuals with disabilities receive in their homes or communities, paid for by Medicaid. Services can include assistance with personal care, case management, long-term home health services, or day care. States are not required to provide these services, but all states do to varying degrees. Whereas Medicaid has traditionally funded mainly institutional care, the goals of HCBS are to enable more individuals to reap the benefits of community living by providing services that enable the greatest independence possible.

Many states have been developing HCBS as an alternative to placing dual-eligible beneficiaries in nursing homes, but HCBS spending per beneficiary varies greatly from state to state. Because nursing homes and HCBS serve the same target population, states with high HCBS spending may be expected to have a lower proportion of their dual-eligible beneficiaries residing in nursing homes. The data shown in Figure 5, however, do not support a negative relationship between spending on HCBS at the state level and the percentage of dual-eligibles residing in nursing homes. In 2012, the variation in nursing home residence among dual-eligibles was nearly identical in the states with low and high spending on HCBS.



Low	Medium	High
($33 to < $435)	($435 to < $889)	($889 to $2,508)

Figure 5. Percent of dual-eligible Medicare beneficiaries who were living in nursing homes (2012), stratified by state Medicaid expenditures on home and community-based services for aged and disabled populations

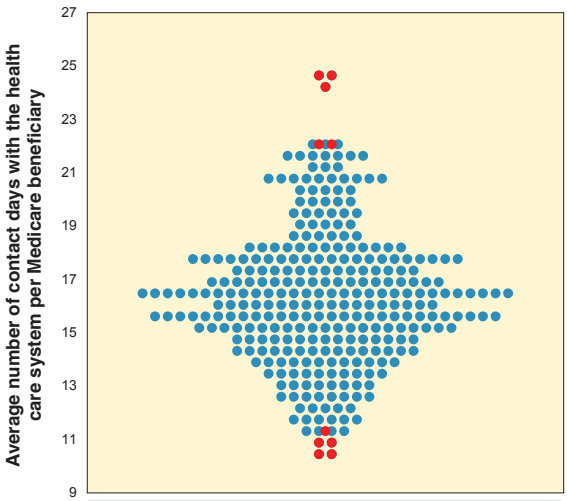
Each blue dot represents one of the 45 states and the District of Columbia for which there is reliable data on home and community-based services. States were categorized into low, medium, or high HCBS spending based on 2011 total aged and aged/disabled state Medicaid Section 1915(c) HCBS waiver expenditures per aged and disabled Medicaid beneficiary. Rates are unadjusted.

How Do Older Americans Interact with the Health Care System?

Older adults are more likely than ever to experience frequent, complex interactions with the health care system involving an expanded cadre of providers. Providers may be unaware of the other health care activities in which an older person may be involved. Understanding how care for older adults is organized and delivered can shed light on whether care could be delivered more efficiently from the patient's point of view. The remaining measures presented in this report focus on care given to fee-for-service Medicare beneficiaries.

Number of Contact Days

The intensity of health care utilization is often reported as rates of use or dollars spent, but those measures have less intuitive meaning for an individual older adult. The number of contact days is a more patient-centered measure of the frequency of interactions with the health care system. Contact days are defined as the number of days a patient spends per year in an inpatient setting or having a clinician visit, procedure, imaging study, or lab test in an ambulatory setting. By measuring how many different days in a year older adults seek or receive some type of medical contact, we can begin to appreciate how much of the older adult's daily life is being occupied by health care.

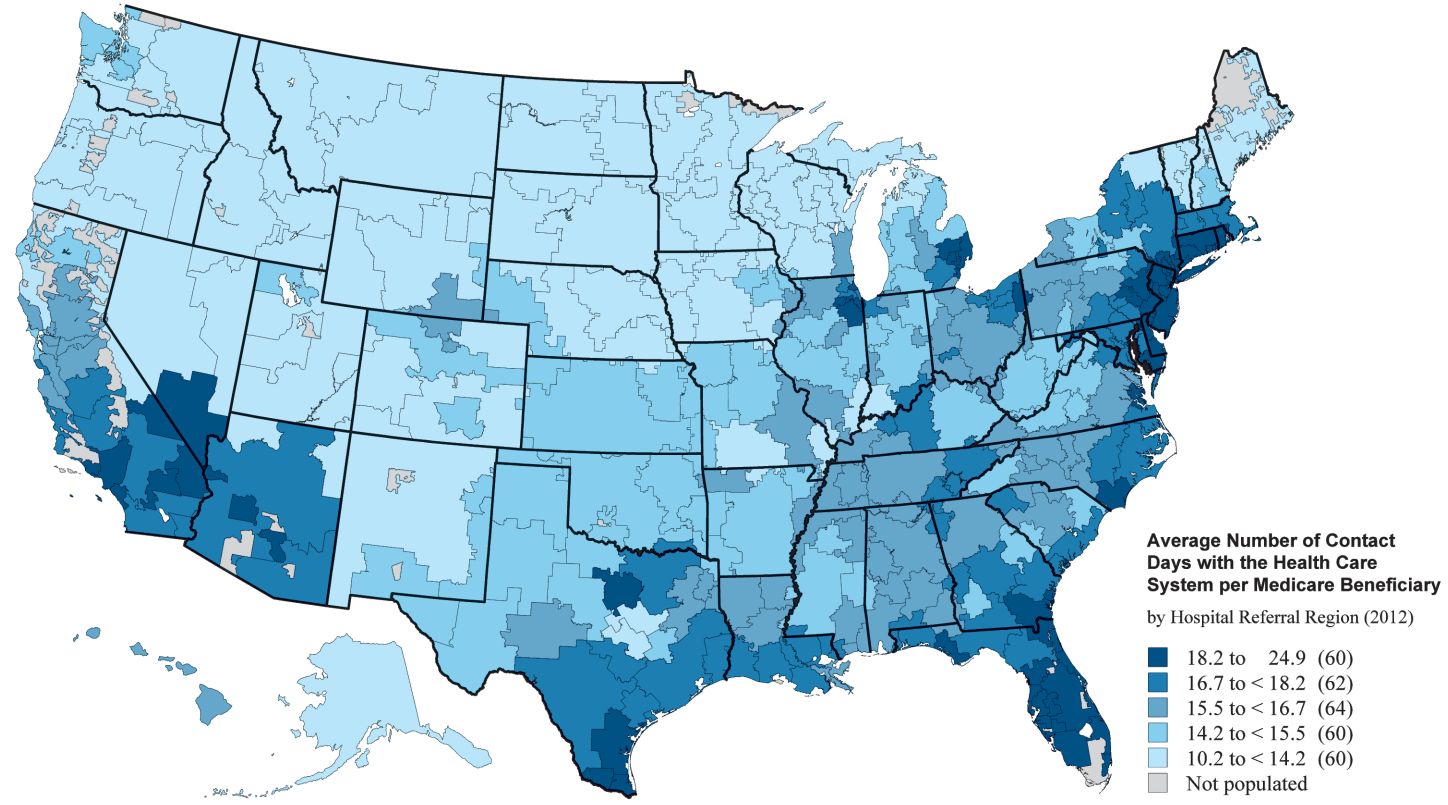


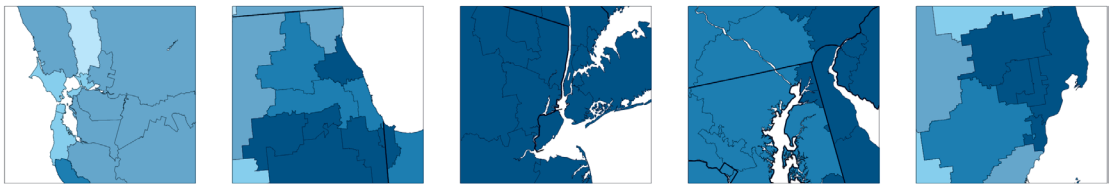
East Long Island, NY	24.9
Manhattan, NY	24.6
Fort Lauderdale, FL	24.3
Miami, FL	22.2
Ridgewood, NJ	22.1
U.S. average	**17.1**
Grand Forks, ND	11.1
Billings, MT	11.1
Minot, ND	10.7
Marquette, MI	10.3
Lebanon, NH	10.2

Figure 6. Average number of days that Medicare beneficiaries were in contact with the health care system, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest average numbers of contact days per beneficiary in 2012. Rates are adjusted for age, sex, and race.

In 2012, the average Medicare beneficiary was in some kind of contact with the health care system on about 17 different days. Beneficiaries living in six hospital referral regions exceeded the national average contact day rate by at least five days, including East Long Island, New York (24.9), Manhattan, New York (24.6), Fort Lauderdale, Florida (24.3), and Miami, Florida (22.2). By contrast, beneficiaries in three regions—Lebanon, New Hampshire (10.2), Marquette, Michigan (10.3), and Minot, North Dakota (10.7)—spent about one week less than average in contact with the health care system in 2012 (Figure 6). In general, patients living in HRRs in Florida, the metropolitan Northeast, and parts of California had higher than average numbers of contact days, while the Midwest and Northwest had much lower rates. In those regions, individuals had fewer than 14 days of contact with the health care system on average (Map 7).





Map 7. Average number of days that Medicare beneficiaries were in contact with the health care system, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

What do contact days mean for a person living in East Long Island, NY or Lebanon, NH?

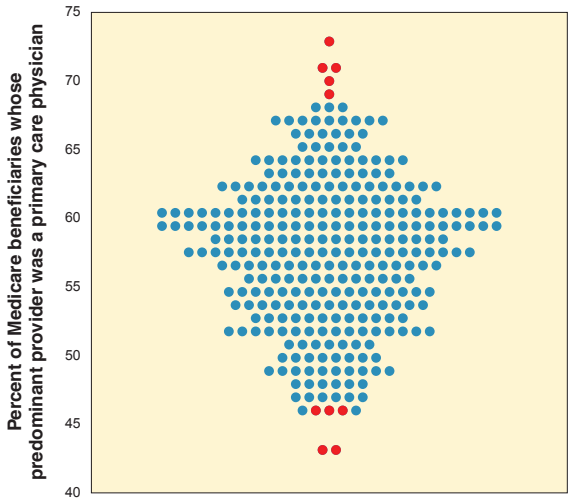
Researchers often report how much health care people use as rates, such as a hospitalization rate of 32 per 1,000 people. Putting that type of number into context can be difficult for patients. Contact days is an alternative way to communicate how much of a person's time, measured in days, is taken up by interacting with the health care system. If an average older adult sat down to think about how much of his or her daily life revolves around health care by counting how many days were spent leaving the home to obtain care in the past year, would he or she be shocked if it added up to 25 days—almost a month—in some parts of the country?

In East Long Island, New York, the average older adult in 2012 did spend about 25 days in contact with the health care system. The average beneficiary's contact days included 15 days with an outpatient visit, 4 days having procedures, 4 days having imaging and lab tests, and 2 days in an inpatient unit. By contrast, in Lebanon, New Hampshire, an average beneficiary spent less than half the number of days receiving health care. The 10 average total contact days included 6 days with ambulatory visits, 1 day for a procedure, 2 days having imaging and labs tests, and 1 day in an inpatient unit. These counts were determined by the type of bill Medicare received for the professional or inpatient services provided, but they do not count additional services a person might have received in their home or paid for out of pocket.

Contact days are reported here as the average for the general Medicare population, but the last section of this report shows the remarkable difference having multiple chronic conditions or dementia can make regarding how much contact a person has with the health care system.

Predominant Provider of Care

The predominant provider of care is the doctor with whom a person has the most ambulatory (outpatient) visits. In general, people might expect that doctor to be from one of the primary care specialties (family practice, internal medicine, or geriatrics) because primary care physicians are expected to manage and coordinate a person's care across time and place. In 2008, the Dartmouth Atlas found that regions with a greater proportion of care provided by primary care physicians tended to have lower costs, higher quality, and lower rates of avoidable hospitalizations.[12]

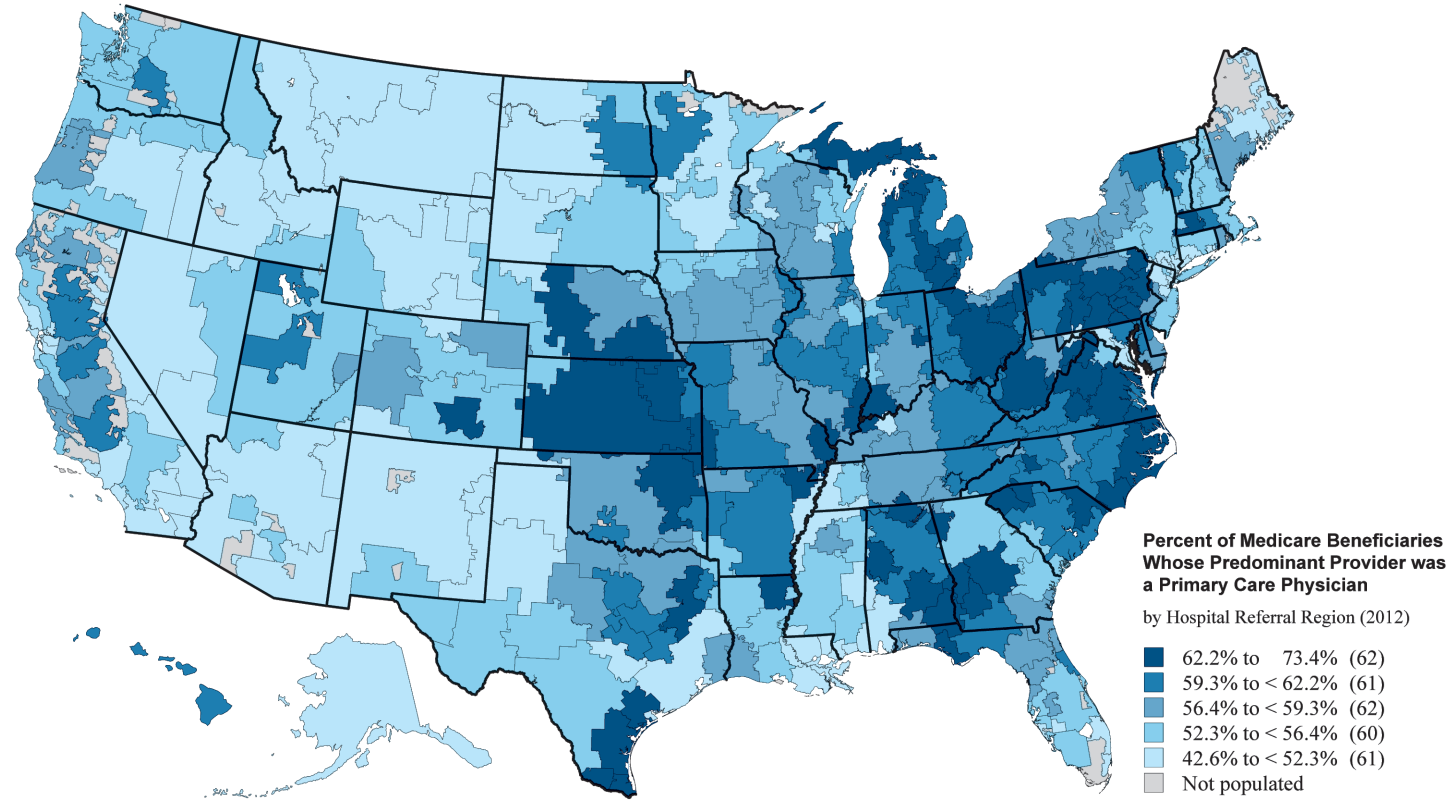


York, PA	73.4%
McAllen, TX	70.9%
Jonesboro, AR	70.8%
Florence, SC	69.7%
Youngstown, OH	68.7%
U.S. average	**56.9%**
Missoula, MT	45.8%
Idaho Falls, ID	45.8%
New Orleans, LA	45.8%
Gulfport, MS	43.4%
Metairie, LA	42.6%

Figure 7. Percent of Medicare beneficiaries who had a primary care physician as their predominant provider of care, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of Medicare beneficiaries with a primary care physician as their predominant provider in 2012. Rates are adjusted for age, sex, and race.

On average, 56.9% of Medicare beneficiaries had a primary care physician as their predominant provider of care in 2012, but this percentage varied across hospital referral regions. More than 70% of beneficiaries had primary care physicians as their main providers in York, Pennsylvania (73.4%), McAllen, Texas (70.9%), and Jonesboro, Arkansas (70.8%); less than half had primary care doctors as their predominant providers in the Gulf Coast regions of Metairie, Louisiana (42.6%), Gulfport, Mississippi (43.4%), and New Orleans (45.8%) (Figure 7). Primary care specialties were most often predominant in regions in Eastern and Midwestern states, including Pennsylvania, Virginia, Ohio, Michigan, and Kansas. The Southwest and West relied less on primary care as the predominant provider (Map 8).

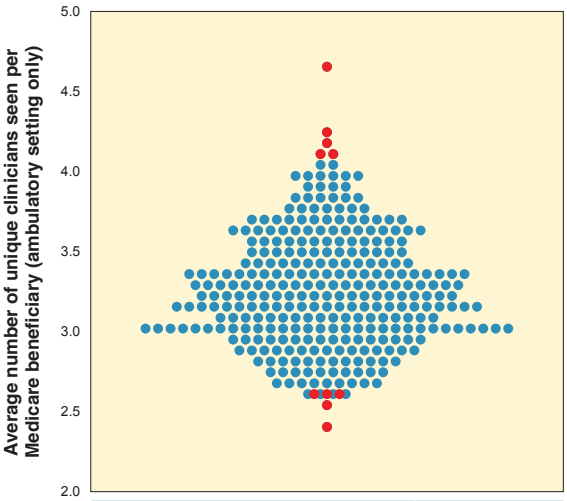


Map 8. Percent of Medicare beneficiaries who had a primary care physician as their predominant provider of care, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

Number of Unique Clinicians

The number of unique clinicians refers to the number of different physicians and nurse practitioners seen by an individual patient in a year in ambulatory settings. It provides a measure of the complexity and fragmentation of care for older adults. The effort to coordinate care requires more attention as the number of providers involved increases. Studies have shown that a higher number of clinicians involved in a patient's care creates more opportunities for overuse and misuse of care, as well as duplication of services and exposure to communication-related risks and errors.[13-16]

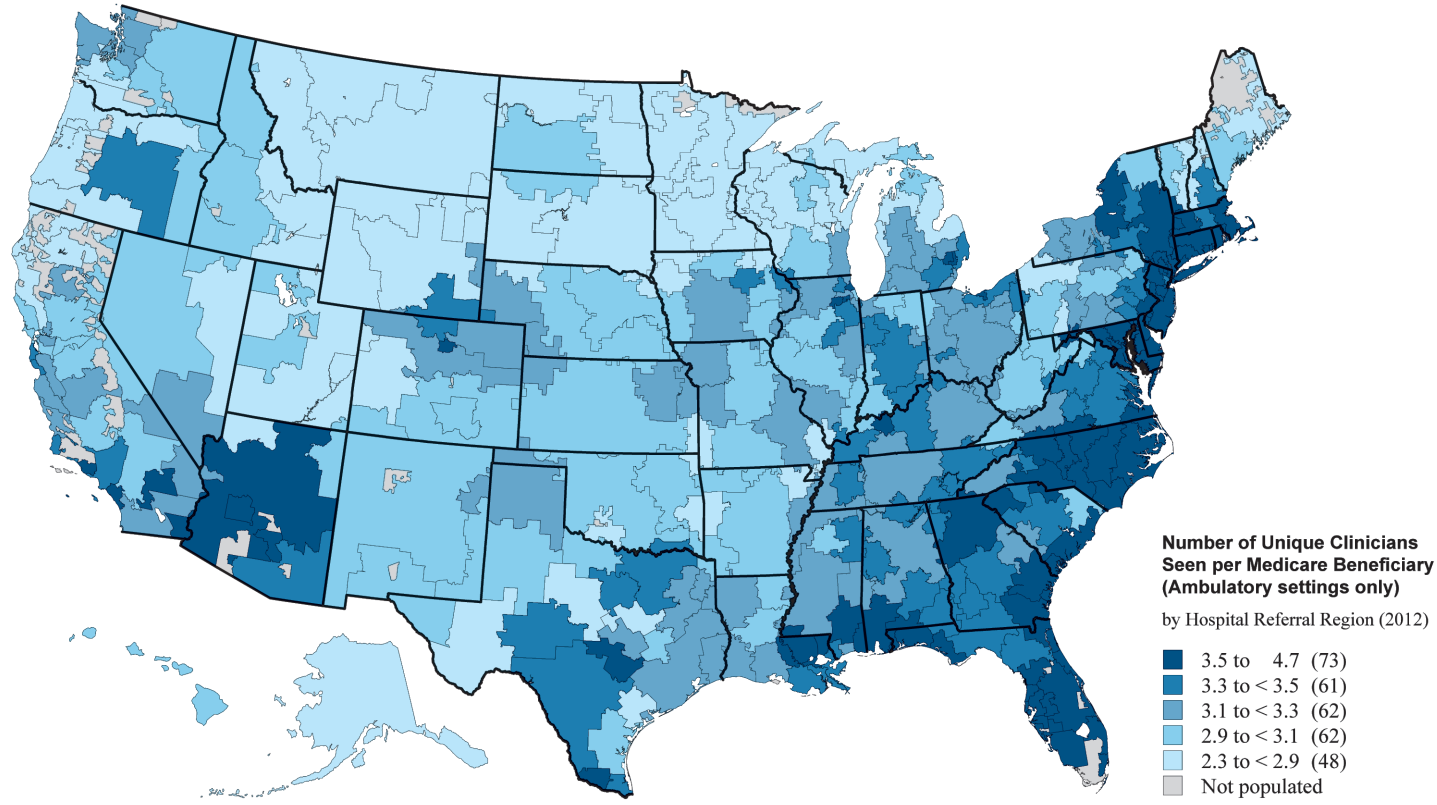


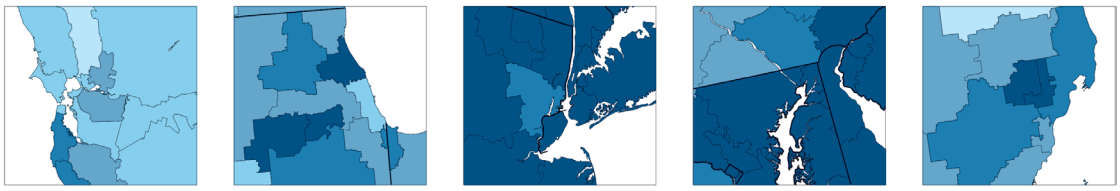
Fort Lauderdale, FL	4.7
Fort Myers, FL	4.2
Sarasota, FL	4.2
Sun City, AZ	4.1
Bradenton, FL	4.1
U.S. average	**3.4**
Anchorage, AK	2.6
Casper, WY	2.6
Missoula, MT	2.6
Marquette, MI	2.5
Bangor, ME	2.4

Figure 8. Average number of unique clinicians seen per Medicare beneficiary, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest average number of different clinicians seen in ambulatory settings per beneficiary in 2012. Rates are adjusted for age, sex, and race.

Medicare beneficiaries, on average, saw 3.4 different clinicians during 2012. The number of unique clinicians seen varied about twofold across hospital referral regions. Patients saw more than four different clinicians in four Florida regions: Fort Lauderdale (4.7), Fort Myers (4.2), Sarasota (4.2), and Bradenton (4.1). Patients saw fewer than three different clinicians in regions such as Bangor, Maine (2.4) and Marquette, Michigan (2.5) (Figure 8). Patients on the East Coast, the Gulf Coast, and in Arizona tended to have more clinicians involved in their care than beneficiaries elsewhere in the country (Map 9).



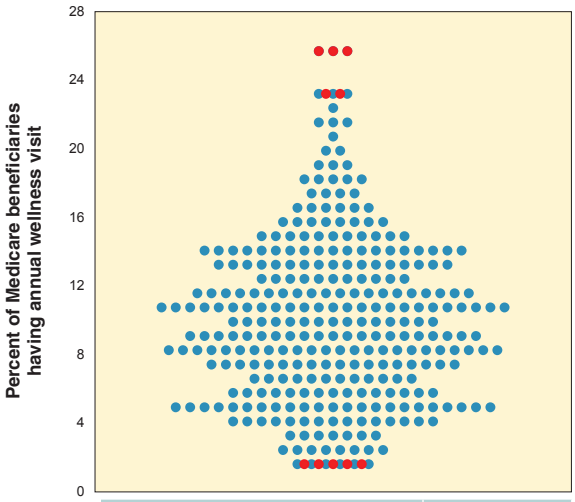


Map 9. Average number of unique clinicians seen per Medicare beneficiary, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

Annual Wellness Visits

As of January 1, 2011, the Affordable Care Act provides Medicare beneficiaries with an annual wellness visit (AWV), which includes personalized prevention planning. The AWV includes an overall assessment and review of the individual's functional ability (including risk for falls), basic measures such as height and weight, a review of the individual's risk factors for depression, the establishment of a screening plan for the next five to ten years, and a discussion about advance directives. The idea is to engage older adults early on in their Medicare experience and help them understand their own health and how to use primary care effectively.

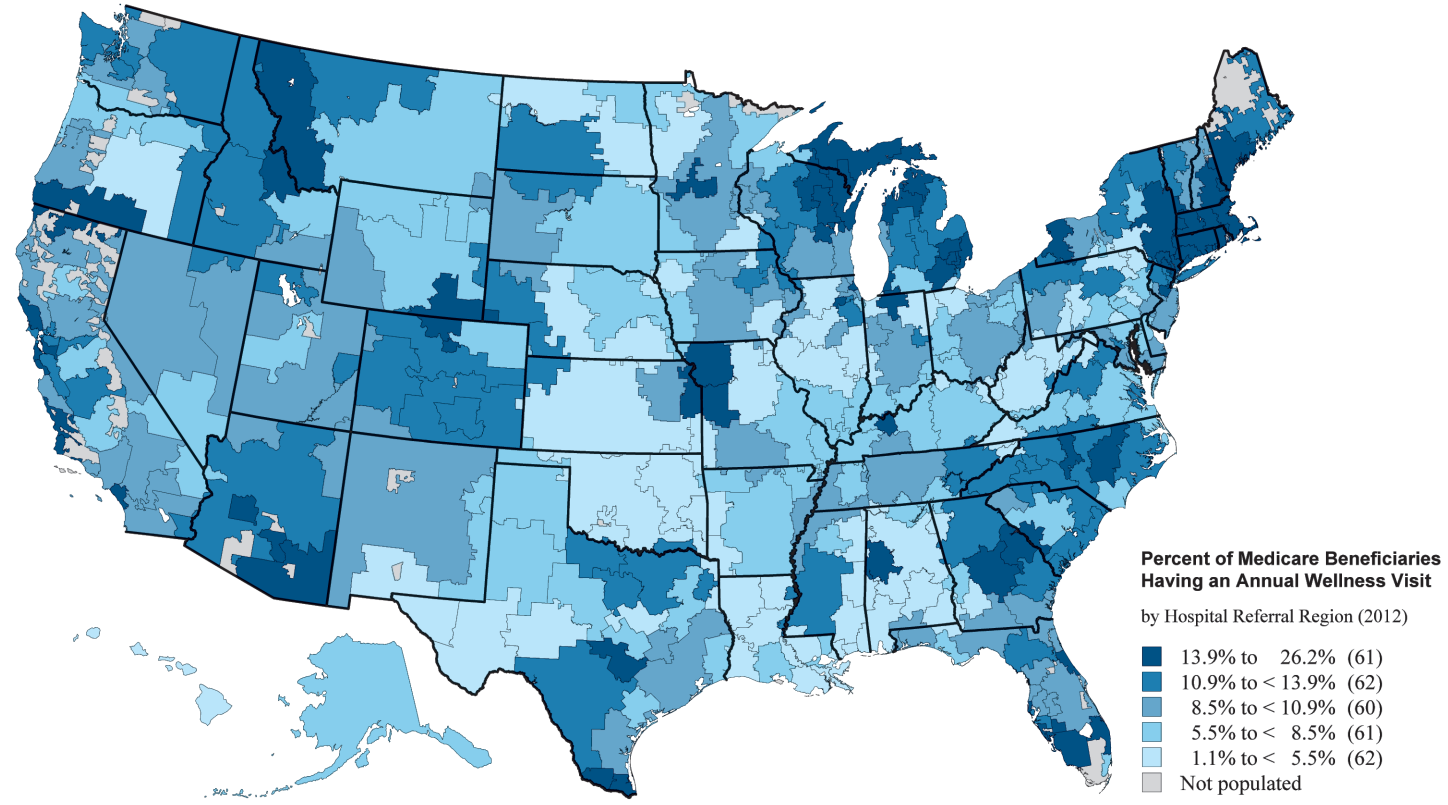


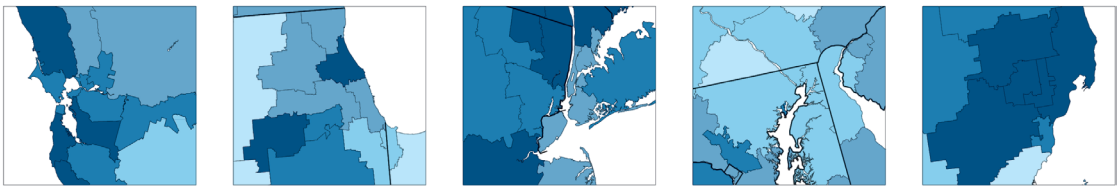
Clearwater, FL	26.1%
Worcester, MA	25.8%
Providence, RI	25.4%
St. Joseph, MI	23.0%
Flint, MI	22.8%
U.S. average	**10.7%**
Slidell, LA	2.0%
Hattiesburg, MS	1.7%
Terre Haute, IN	1.6%
Minot, ND	1.5%
Meridian, MS	1.2%

Figure 9. Percent of Medicare beneficiaries having prevention visits, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of Medicare beneficiaries having an annual wellness visit in 2012. Rates are adjusted for age, sex, and race.

Nationally, 10.7% of Medicare beneficiaries had an AWV in 2012, the first full year of its availability. There was substantial geographic variation across hospital referral regions. More than one-quarter of beneficiaries had an AWV in Clearwater, Florida (26.1%), Worcester, Massachusetts (25.8%), and Providence, Rhode Island (25.4%). Less than 2% had a prevention visit in four regions: Meridian, Mississippi (1.2%), Minot, North Dakota (1.5%), Terre Haute, Indiana (1.6%), and Hattiesburg, Mississippi (1.7%) (Figure 9). Areas of high AWV utilization were scattered across the country, with concentrations in New England and the upper Midwest. In many central regions of the country, less than 5% of Medicare beneficiaries had an AWV in 2012 (Map 10).



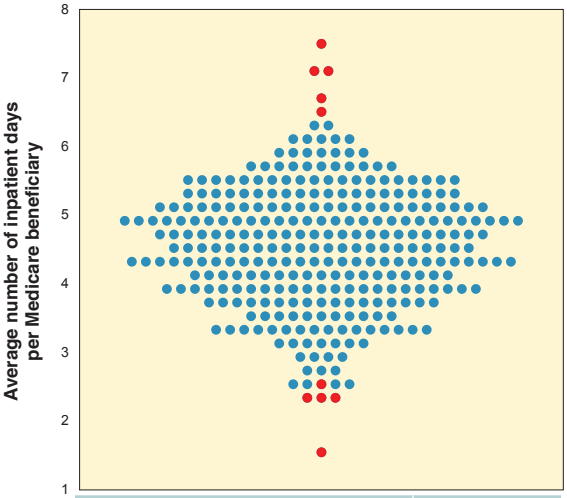


Map 10. Percent of Medicare beneficiaries having prevention visits, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

Number of Days Spent in an Inpatient Setting

The hospital is an important site of care for Medicare beneficiaries who have a major acute illness or surgery. After the hospital stay, beneficiaries may receive additional inpatient care in a skilled nursing facility (SNF) for further rehabilitation. Individuals who spend many days in inpatient settings require not only expensive and resource-intensive care, but also complex coordination between those facilities and the patients' primary care offices and residential care facilities.[9,10,17-21]

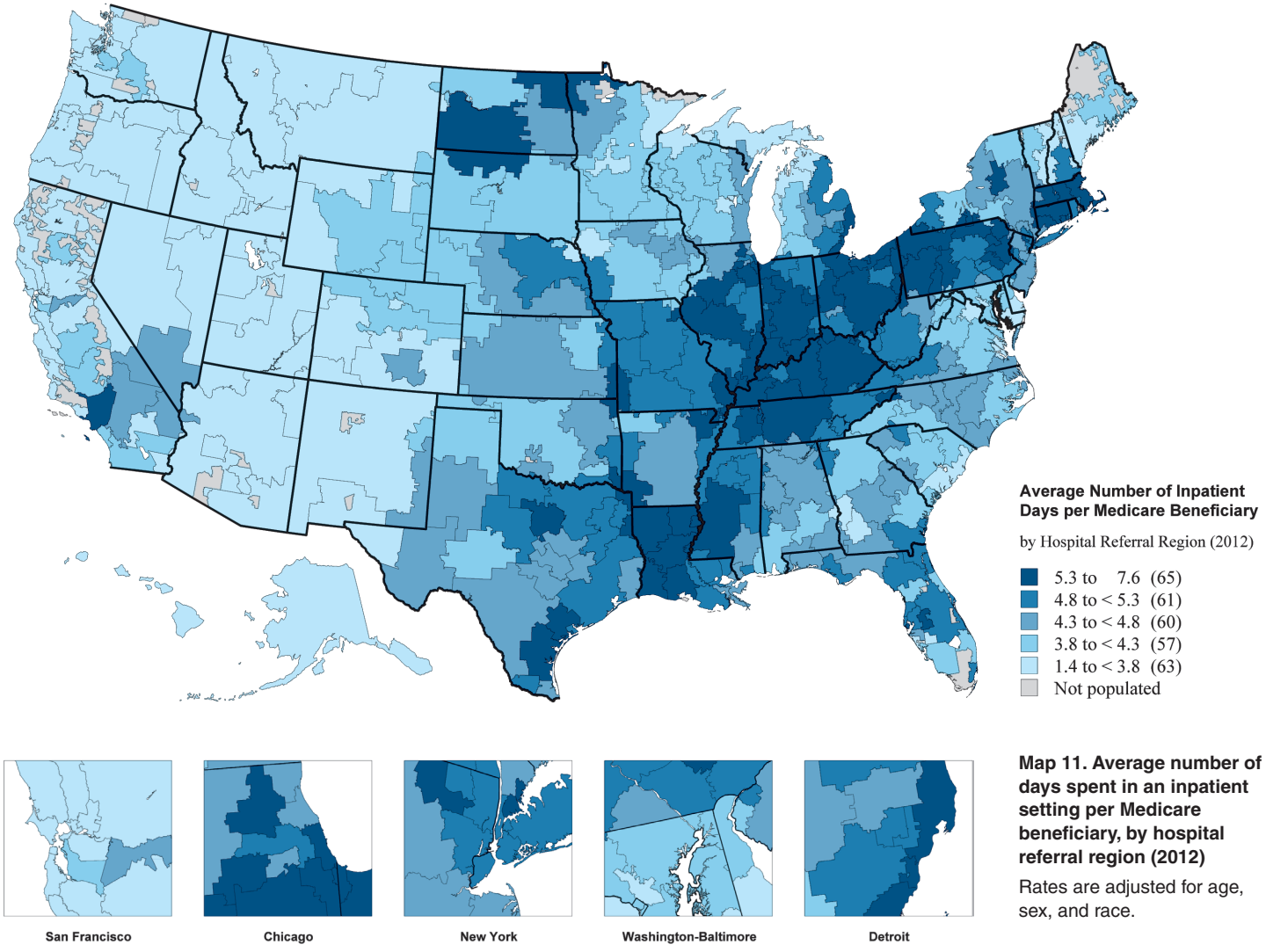


Monroe, LA	7.6
Alexandria, LA	7.2
Shreveport, LA	7.2
Johnstown, PA	6.6
Evansville, IN	6.4
U.S. average	**4.6**
Grand Junction, CO	2.5
Salem, OR	2.4
San Luis Obispo, CA	2.4
Santa Barbara, CA	2.4
Bend, OR	1.4

Figure 10. Average number of days spent in an inpatient setting per Medicare beneficiary, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest numbers of inpatient days per beneficiary in 2012. Rates are adjusted for age, sex, and race.

In 2012, Medicare beneficiaries spent an average of 4.6 days in inpatient (hospital and SNF) settings, but the rate varied substantially across hospital referral regions. Patients spent more than seven days as inpatients in three Louisiana regions: Monroe (7.6), Alexandria (7.2), and Shreveport (7.2). Less than a third of that time was spent in inpatient care by patients living in the West Coast regions of Bend, Oregon (1.4), Santa Barbara, California (2.4), San Luis Obispo, California (2.4), and Salem, Oregon (2.4) (Figure 10). States with high numbers of inpatient days across all or most of their HRRs included Illinois, Indiana, Kentucky, Ohio, Pennsylvania, and Louisiana. Almost all of the HRRs in the Western and Mountain states had fewer than four inpatient days per beneficiary (Map 11).



Map 11. Average number of days spent in an inpatient setting per Medicare beneficiary, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

Where Does Care Coordination Occur?

The need for better care coordination has been a rallying cry of health reform. The notion is that, through better coordination, there will be better disease management and outcomes for patients, along with reduced use of low-value or wasteful services. Yet identifying care coordination in practice can be elusive, and it is difficult to even define. This consensus-based definition by the Agency for Healthcare Research and Quality (AHRQ), developed from forty definitions found in the literature, captures the multidimensionality of "care coordination":

> *"Care coordination is the deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient's care to facilitate the appropriate delivery of health care services. Organizing care involves the marshaling of personnel and other resources needed to carry out all required patient care activities, and is often managed by the exchange of information among participants responsible for different aspects of care."*[22]

AHRQ also identified services that providers who coordinate care offer: they negotiate responsibility, facilitate transitions, assess needs and goals, create a proactive plan of care, monitor, follow up, respond to change, support self-management goals, and link to community resources.
While we cannot directly measure these coordination activities, we do observe some patterns that suggest that achieving the goals of coordination may be more difficult in some regions than others. For example, the sheer volume of services that require coordination based on the contact days and inpatient days analyses can increase the difficulty of coordination. In addition, many ongoing new payment models, such as primary care medical homes and comprehensive primary care, rely on primary care providers to successfully coordinate care, but in some regions specialists may be playing a more prominent role; it is unknown, however, whether those specialists are aware that they are the predominant provider and whether they would want to be the provider responsible for the breadth of coordination services. If not, it will be important for older adults to discuss with their doctors who will help them coordinate their care as they age.

Which Areas Still Need Improvement?

Past research on geographic variation has brought to light issues and concerns with the way health care is being delivered across the U.S. It is important to continue to monitor these areas to discern whether improvement has been made. This section looks at two areas where the complex decision-making necessary to effect change in practice is particularly meaningful for an aging population.

Recommendations about screening for cancer have shifted over the last decade to ensure that people who are unlikely to experience benefit—but may experience harm—from screening do not get screened. For older adults, this shift has translated into guidelines that indicate an age above which screening is not recommended. Making the decision to cease screening may be challenging for clinicians and patients.

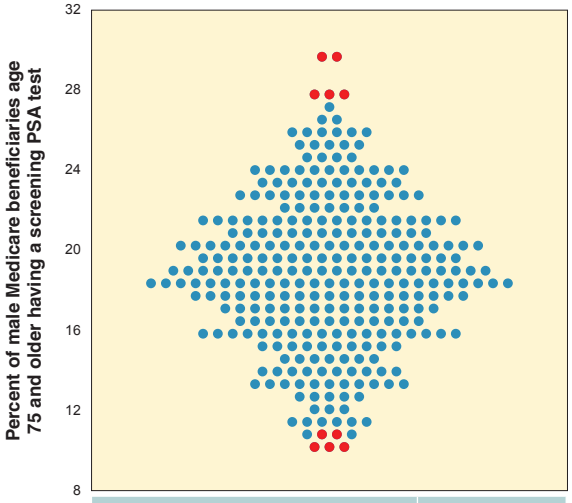
Decisions about how to deliver care at the end of life are also challenging for older adults, their families, and the clinicians involved in their care. For an aging population, many of whom are approaching death, monitoring whether end-of-life care is delivered well and consistent with patient preferences is a priority.

The five specific areas examined in which improvement is still needed are: screening for prostate cancer, screening for breast cancer, late referral to hospice, feeding tube placement in patients with dementia, and the number of days spent in intensive care during the last six months of life.

Screening for Prostate Cancer in Men Age 75 and Older

Screening men for prostate cancer with a blood test, called a prostate-specific antigen (PSA) test, has been controversial because the clinical trials focused on men age 55-69 have conflicting results. For older men, however, there is consensus that screening should not occur. In 2008, the U.S. Preventive Services Task Force (USPSTF) recommended against screening men older than 75 with a PSA test, citing evidence that the benefits of PSA-based screening for prostate cancer do not outweigh the harms.[23] The American Cancer Society and the American Urological Association concur and caution against PSA testing in older men, recommending no screening when life expectancy is shorter than 10 years.

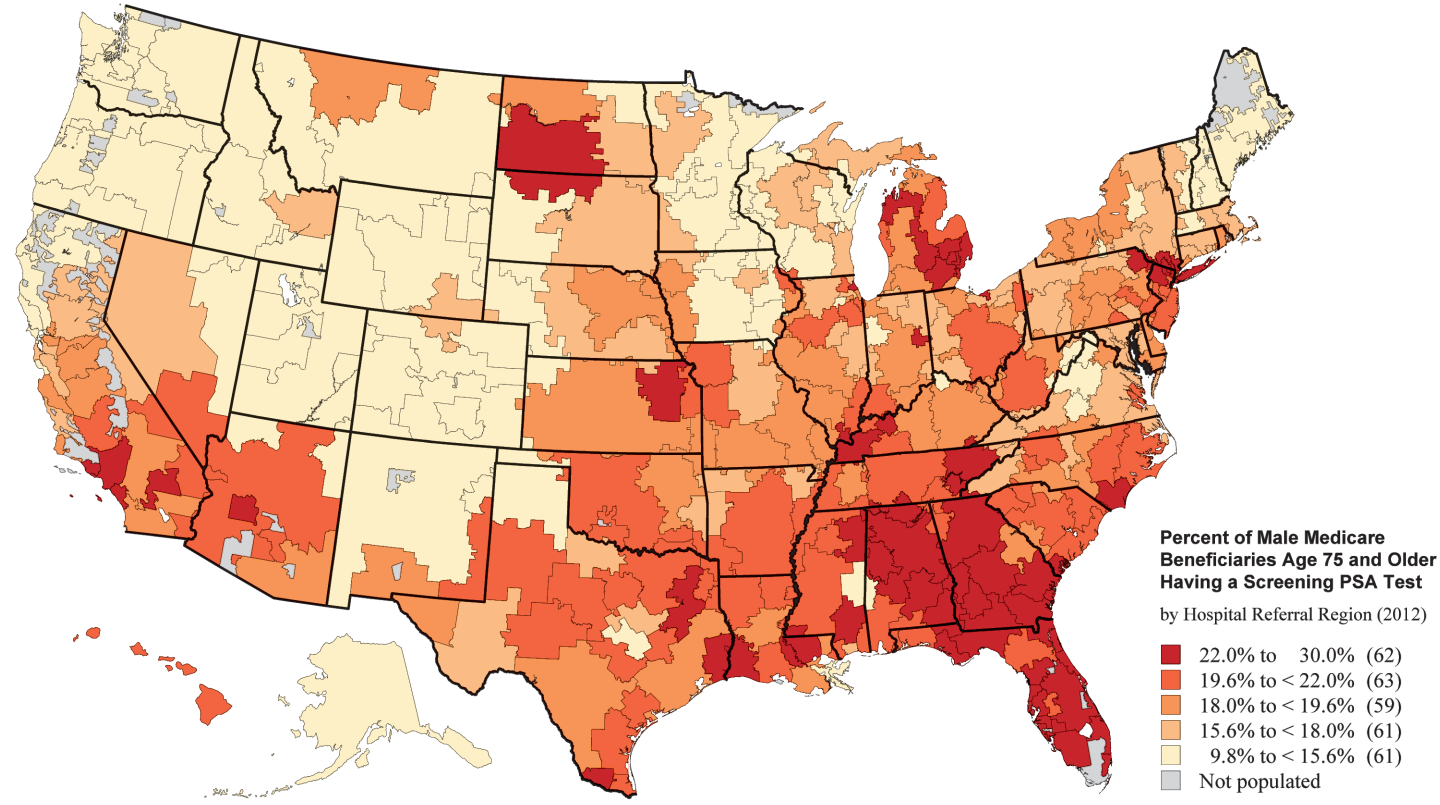
In spite of the consensus about the lack of benefit among the oldest men, practices surrounding the screening of men age 75 and older for prostate cancer continue to vary across the country. The national average rate of PSA screening among men age 75 and older was 19.5% in 2012. Regional rates ranged from about 10% in Casper, Wyoming (9.9%), Lebanon, New Hampshire (10.2%), and Madison, Wisconsin (10.3%) to about 30% in Miami (30.0%) and Flint, Michigan (29.9%) (Figure 11). High regional rates were observed in Eastern and Southeastern states, including New Jersey, Georgia, Alabama, and Florida (Map 12).

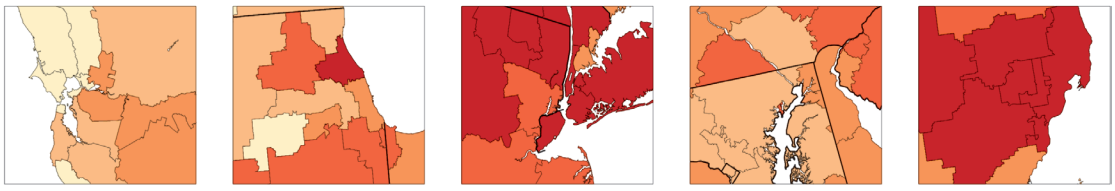


Miami, FL	30.0%
Flint, MI	29.9%
Huntsville, AL	28.0%
Owensboro, KY	27.5%
Los Angeles, CA	27.5%
U.S. average	**19.5%**
Winchester, VA	10.8%
Grand Junction, CO	10.6%
Madison, WI	10.3%
Lebanon, NH	10.2%
Casper, WY	9.9%

Figure 11. Percent of male Medicare beneficiaries age 75 and older who received a screening PSA test, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of male beneficiaries having a screening PSA test in 2012. Rates are unadjusted.





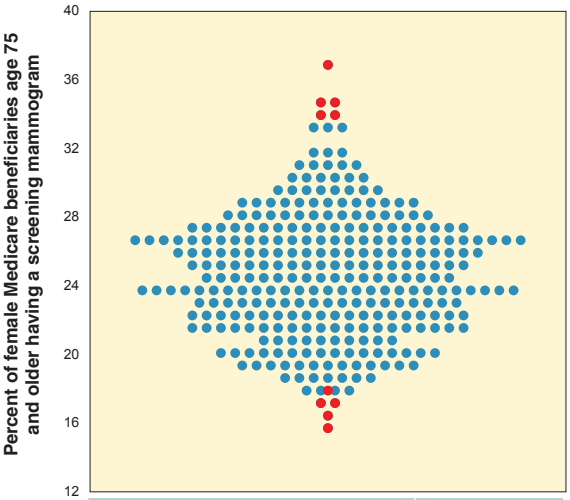
Map 12. Percent of male Medicare beneficiaries age 75 and older who received a screening PSA test, by hospital referral region (2012)

Rates are unadjusted.

Screening for Breast Cancer in Women Age 75 and Older

Regular breast cancer screening with mammography has long been promoted in the medical community, but recent research suggests that screening is having only a small effect, if any, on breast cancer-related mortality.[24,25] The USPSTF currently recommends biennial screening mammography for women age 50-74, but acknowledges that the current evidence for assessing the benefits of screening in women age 75 and older is insufficient. The decision to screen needs to take into account the uncertainty about the benefit and whether life expectancy will exceed 5-10 years.

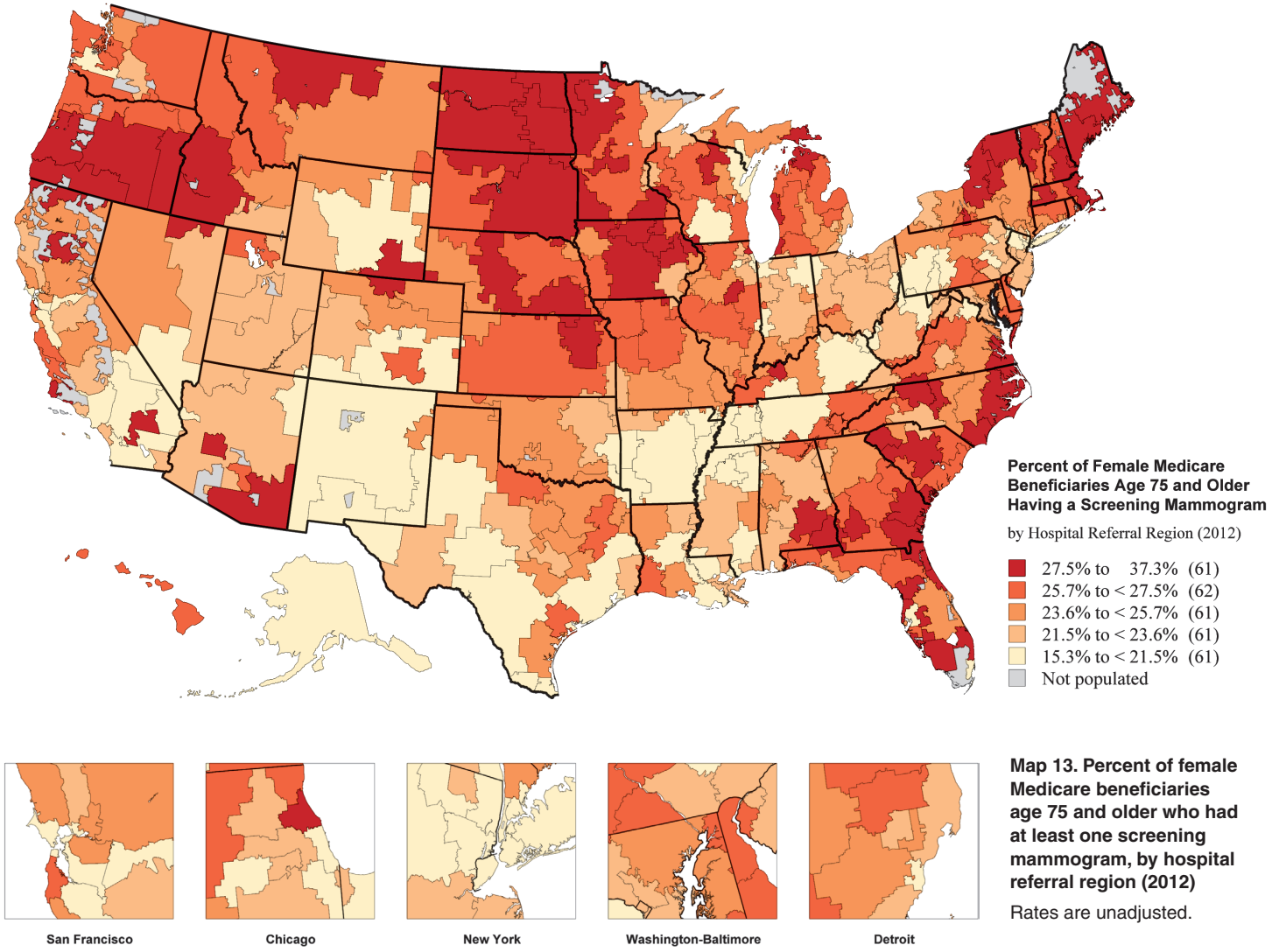
The percentage of female Medicare beneficiaries age 75 and older having a screening mammogram varied more than twofold across hospital referral regions in 2012, from a low of 15.3% in Miami to a high of 37.2% in Sun City, Arizona. The national average rate of screening mammography was 24.2%. Rates of screening mammography in women age 75 and older were also relatively low in the Texas regions of Harlingen (16.3%), McAllen (17.1%), and El Paso (17.2%); the rates were about twice as high in Ocala, Florida (34.9%), Minot, North Dakota (34.8%), and Palm Springs/Rancho Mirage, California (34.2%) (Figure 12). The proportions of older women undergoing screening were high among HRRs in the Northeast, Southeast, and northern central states including North Dakota, South Dakota, and Minnesota (Map 13).



Sun City, AZ	37.2%
Ocala, FL	34.9%
Minot, ND	34.8%
Palm Springs/Rancho Mirage, CA	34.2%
Ormond Beach, FL	33.6%
U.S. average	**24.2%**
Manhattan, NY	17.6%
El Paso, TX	17.2%
McAllen, TX	17.1%
Harlingen, TX	16.3%
Miami, FL	15.3%

Figure 12. Percent of female Medicare beneficiaries age 75 and older who had at least one screening mammogram, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of female beneficiaries having a screening mammogram in 2012. Rates are unadjusted.



Map 13. Percent of female Medicare beneficiaries age 75 and older who had at least one screening mammogram, by hospital referral region (2012)

Rates are unadjusted.

Goal-Directed Care Critical as We Age

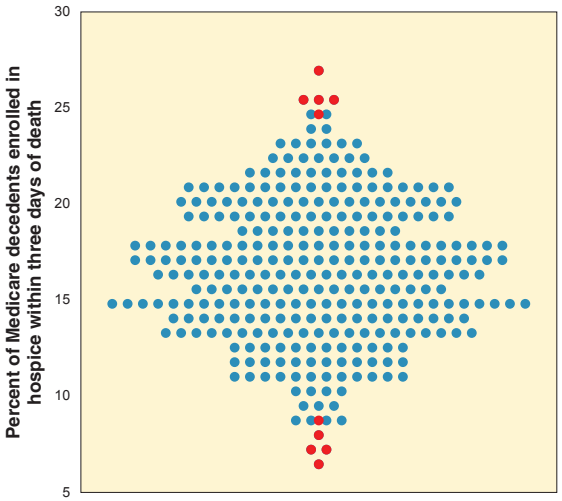
While incorporating patient values into health care decisions is important for all ages, it is critical for older adults because goals and priorities may change with age. This section about aggressive end-of-life care and screening for early cancer among the oldest adults provides examples of areas where an older adult's goals and preferences for care might differ from those of a much younger person.

For younger people who are decades from death, the goals of care will overridingly be about living as long as possible free of disease or impairment. But as a person reaches the last decade of life, preferences for the quality of one's life may dominate over gaining additional time through aggressive treatment or accepting treatment to prevent an illness 10 to 20 years down the road. These goals, however, will only become apparent to clinicians if they engage with their patients in decisions about their care, a process called shared decision-making. Shared decision-making is a collaborative process that allows patients and their providers to make health care treatment decisions together, taking into account the best scientific evidence available, as well as the patient's own values and preferences.

In the shared decision-making model, physicians share information about the benefits and trade-offs of treatment options. But there is reciprocal information flowing from the patient to the clinician about what the patient's goals and values are. When gaps between the services provided and what really matters to the patient occur, it suggests that the process by which clinicians make health care decisions with older adults is not centered on both the evidence and the individual's situation, needs, and preferences.

Late Hospice Referral at the End of Life

Managing end-of-life care is a sensitive and challenging process. Rates of hospice referral often do not reflect patient preferences, which tend to favor comfort measures over medical intervention.[26] Referrals to hospice care that are done too late also adversely affect the quality of care, the reported experiences of patients and families, and their satisfaction with the health care system.[27,28]

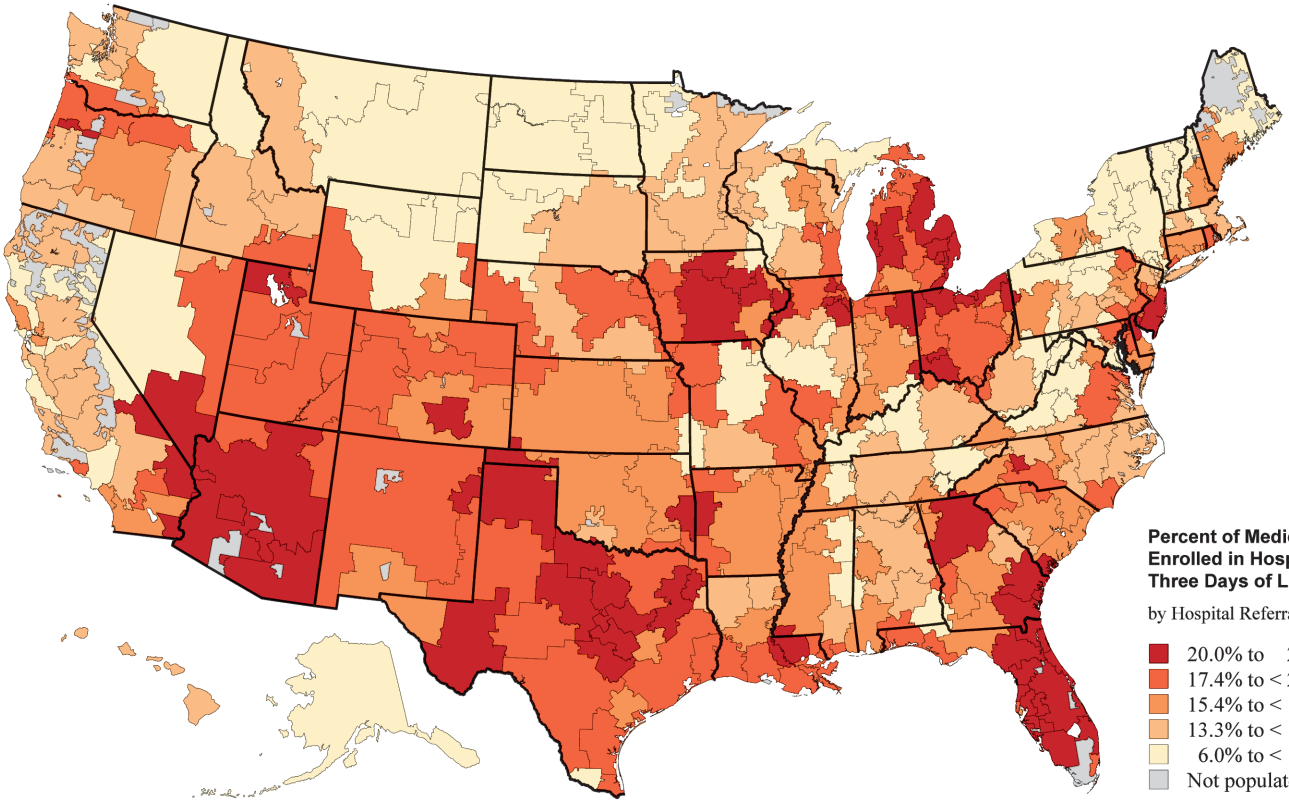


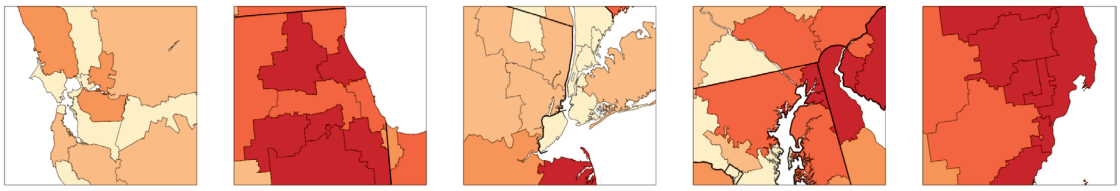
Fort Lauderdale, FL	27.3%
Cincinnati, OH	25.7%
Sun City, AZ	25.2%
Mason City, IA	25.2%
Elgin, IL	24.7%
U.S. average	**16.8%**
Bangor, ME	8.6%
Anchorage, AK	8.1%
Grand Forks, ND	7.4%
Syracuse, NY	7.0%
Bronx, NY	6.1%

Figure 13. Percent of Medicare decedents who were enrolled in hospice care during the last three days of life, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of Medicare beneficiaries who enrolled in hospice within three days of their deaths. Rates are adjusted for age, sex, and race.

The percentage of Medicare decedents who were enrolled in hospice care within three days of their deaths varied more than fourfold across hospital referral regions in 2012, from 6.1% in the Bronx, New York HRR to 27.3% in Fort Lauderdale. The national average was 16.8%. Rates of late hospice referral were also relatively low in Syracuse, New York (7.0%), Grand Forks, North Dakota (7.4%), Anchorage, Alaska (8.1%), and Bangor, Maine (8.6%). More than one-quarter of patients were enrolled in hospice within three days of death in Cincinnati, Ohio (25.7%), Sun City, Arizona (25.2%), and Mason City, Iowa (25.2%) (Figure 13, Map 14).



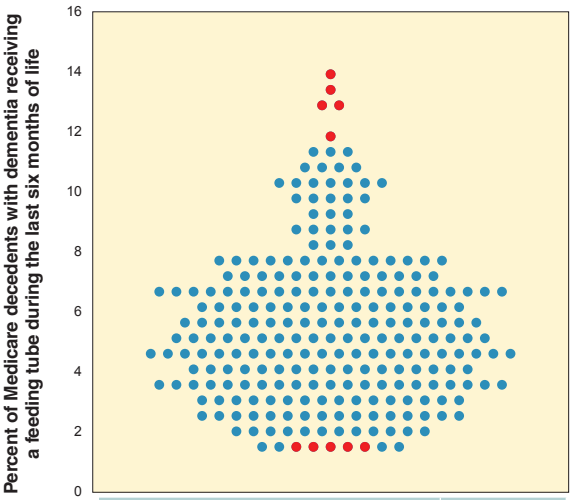


Map 14. Percent of Medicare decedents who were enrolled in hospice care during the last three days of life, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

Feeding Tube Placement in People with Dementia

In people with advanced dementia, loss of interest in food and the inability to swallow mark the final phases of the disease and are irreversible. Clinical evidence has shown that feeding tube placement in such patients does not prolong life or improve outcomes, and in fact leads to further complications and adverse effects such as the increased use of restraints.[29,30] Though once very common—particularly in nursing homes, which were required to provide nutrition and hydration—feeding tube placement in people with advanced dementia is no longer the recommended course of care.[30]

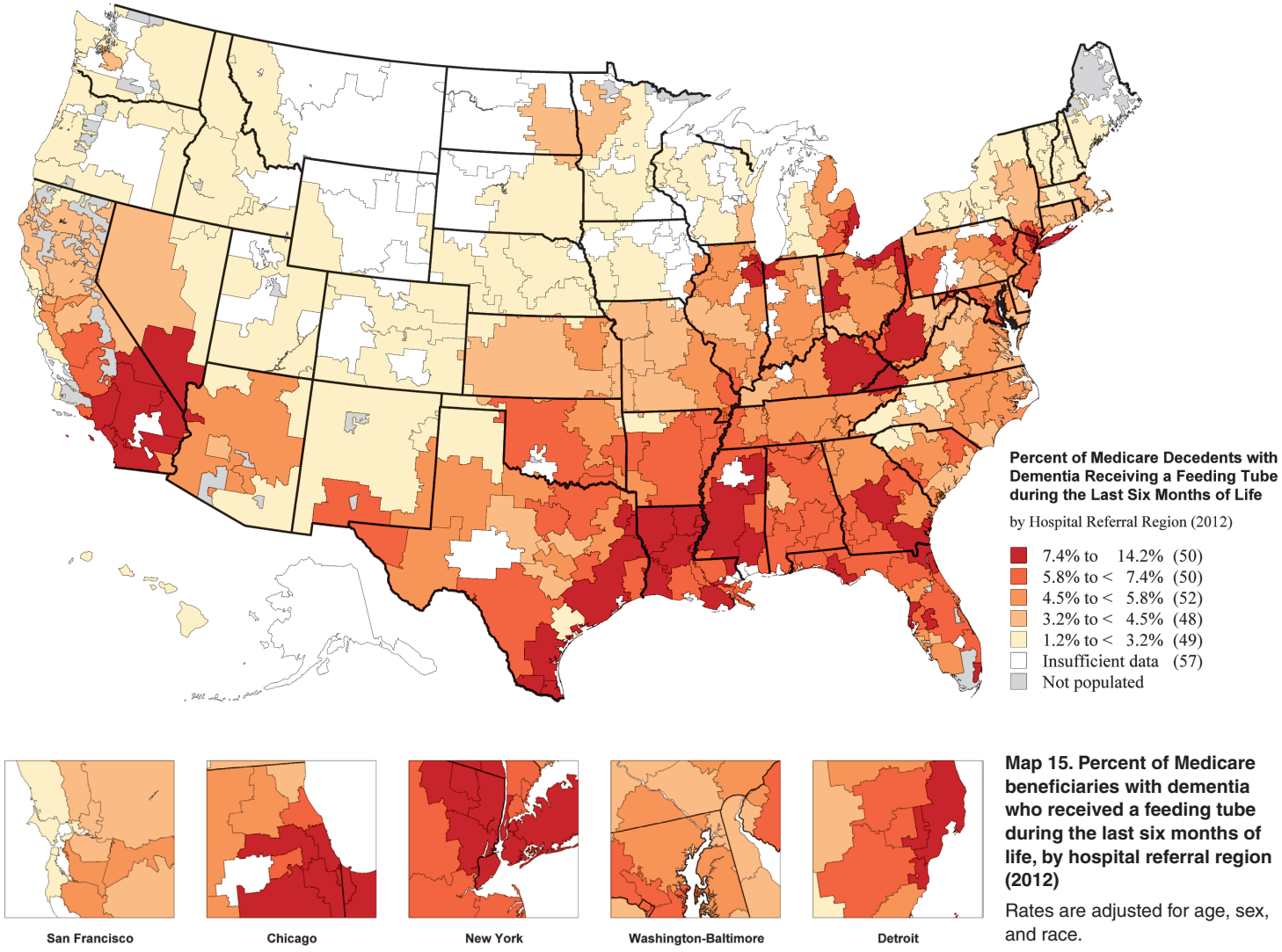


Lake Charles, LA	14.2%
Dearborn, MI	13.3%
Los Angeles, CA	12.8%
Munster, IN	12.7%
Blue Island, IL	11.7%
U.S. average	**6.0%**
Portland, ME	1.6%
Asheville, NC	1.6%
Madison, WI	1.4%
Salt Lake City, UT	1.3%
Portland, OR	1.3%

Figure 14. Percent of Medicare beneficiaries with dementia who received a feeding tube during the last six months of life, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest percentages of Medicare beneficiaries with dementia who received a feeding tube in the last six months of their lives. Rates are adjusted for age, sex, and race.

The percentage of Medicare decedents with dementia receiving a feeding tube during the last six months of life varies substantially across the U.S. In 2012, 6% of decedents with dementia received a feeding tube in the last six months of life. This rate ranged from less than 2% of patients living in Portland, Oregon (1.3%), Salt Lake City, Utah (1.3%), and Madison, Wisconsin (1.4%) to more than 10% of patients living in Lake Charles, Louisiana (14.2%), Dearborn, Michigan (13.3%), and Los Angeles, California (12.8%) (Figure 14). Rates of feeding tube placement in this patient population were high in HRRs in southern California, Louisiana, parts of Kentucky, and New Jersey. It was less common in New England, New York, most of the Plains states, and the Northwest. Feeding tube placement rates were also high in many denser metropolitan areas such as Detroit, Chicago, and New York City (Map 15).



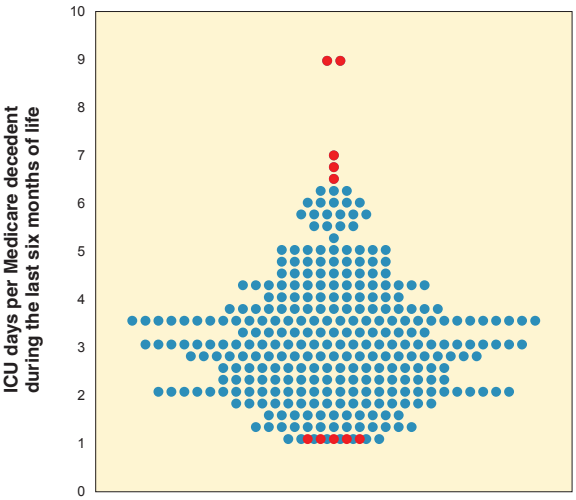
Map 15. Percent of Medicare beneficiaries with dementia who received a feeding tube during the last six months of life, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

Days Spent in the Intensive Care Unit in the Last Six Months of Life

The intensity of care in the final months of life varies significantly across U.S. hospital referral regions. The average number of days spent in the intensive care unit (ICU) in the last six months of life is trending upward, despite patient preferences for less intensive inpatient care and questions about the value of such care.[26] Unnecessarily aggressive care at the end of life can detract from, rather than improve, patients' quality of life. Higher numbers of ICU days are also associated with higher costs, with a high percentage of Medicare spending going toward paying for care in the last year of life.[31]

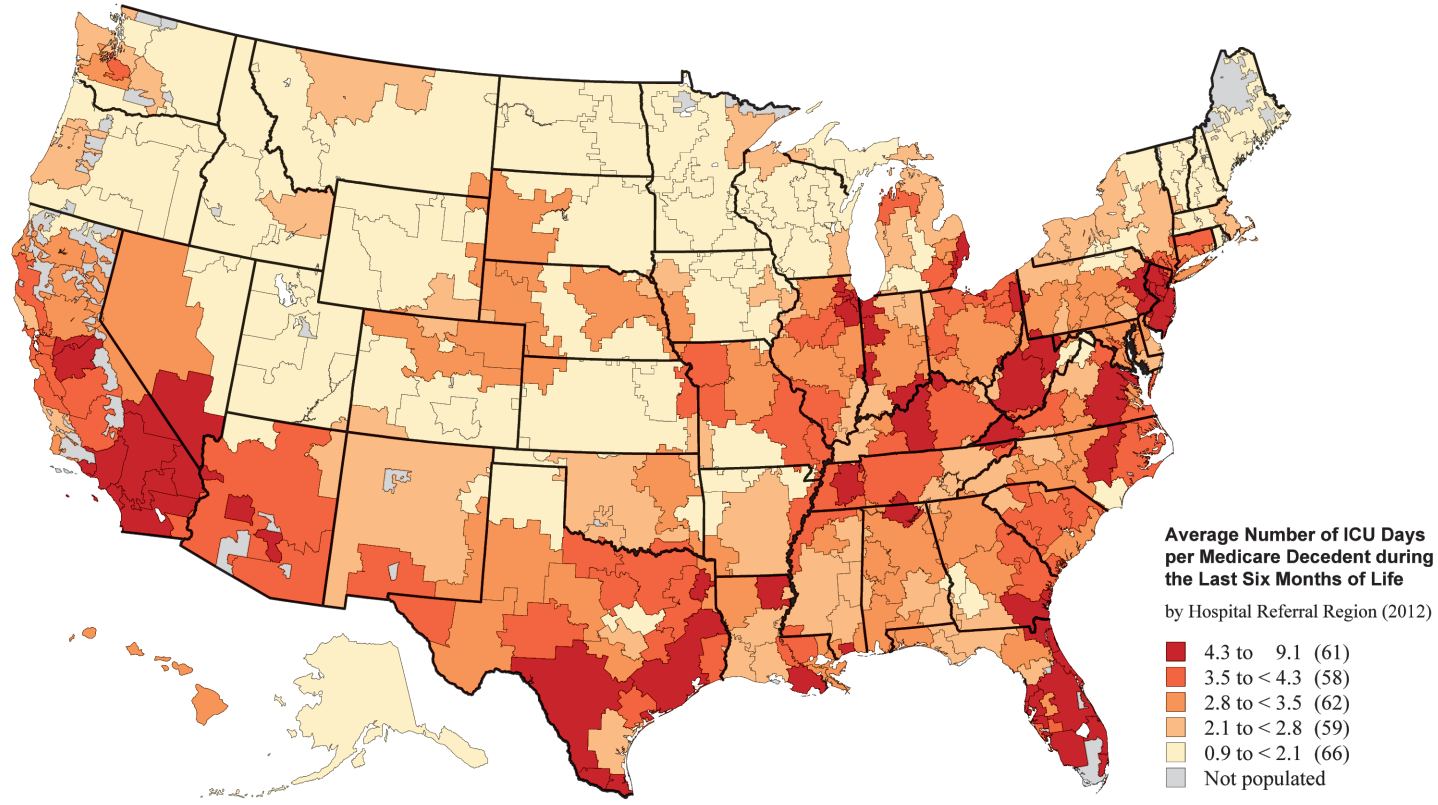
The average number of days that Medicare beneficiaries who died in 2012 spent in the ICU in the last six months of their lives varied from about one day to about nine days. The national average was 3.6 days. Patients spent relatively few days in the ICU during the last six months of life in the Wisconsin regions of La Crosse (1.0), Neenah (1.0), and Appleton (1.1); patients who died in in Miami (9.1), McAllen, Texas (9.1), and Los Angeles (7.1) spent more than a week in the ICU (Figure 15). High-use HRRs were scattered around the East Coast, the Midwest, parts of Texas, and California (Map 16).



Miami, FL	9.1
McAllen, TX	9.1
Los Angeles, CA	7.1
St. Petersburg, FL	6.7
Elgin, IL	6.5
U.S. average	**3.6**
Bismarck, ND	1.1
Appleton, WI	1.1
Minot, ND	1.0
Neenah, WI	1.0
La Crosse, WI	1.0

Figure 15. Average number of days spent in intensive care during the last six months of life per Medicare beneficiary, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red dots indicate the five regions with the highest and the five regions with the lowest numbers of ICU days during the last six months of life per patient who died in 2012. Rates are adjusted for age, sex, and race.



Map 16. Average number of days spent in intensive care during the last six months of life per Medicare beneficiary, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

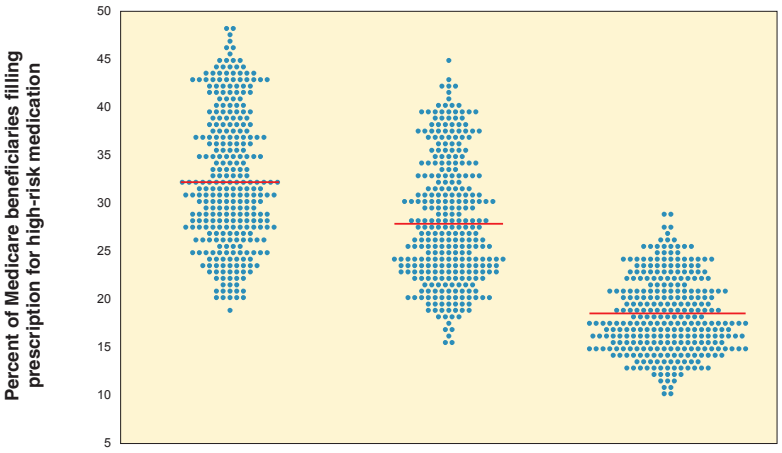
In Which Areas Are We Making Progress?

Increased awareness and continued monitoring of key practices and measures have led to improvements in several areas in recent years. In some cases, practice guidelines have been modified to reflect new insights, while in other areas, explicit policy changes have helped to realign incentives.

This section describes four areas in which health care for older populations has improved in recent years: decreased use of high-risk medications, increased testing for diabetes, a reduction in preventable hospital admissions, and reduced thirty-day readmissions.

Use of High-Risk Medications

Some medications, while safe and effective in younger patients, pose a risk to patients age 65 and over. The risk of being prescribed an inappropriate medication increases as contact with the health system becomes more frequent.[32-38] The National Committee for Quality Assurance (NCQA) has developed a list of medications to be avoided in the elderly and includes it as part of the Healthcare Effectiveness Data and Information Set (HEDIS). These medications have significant rates of adverse effects when used in older patients, and the magnitude of the expected benefit generally does not outweigh these risks. Despite this consensus, these drugs continue to be prescribed to Medicare beneficiaries.

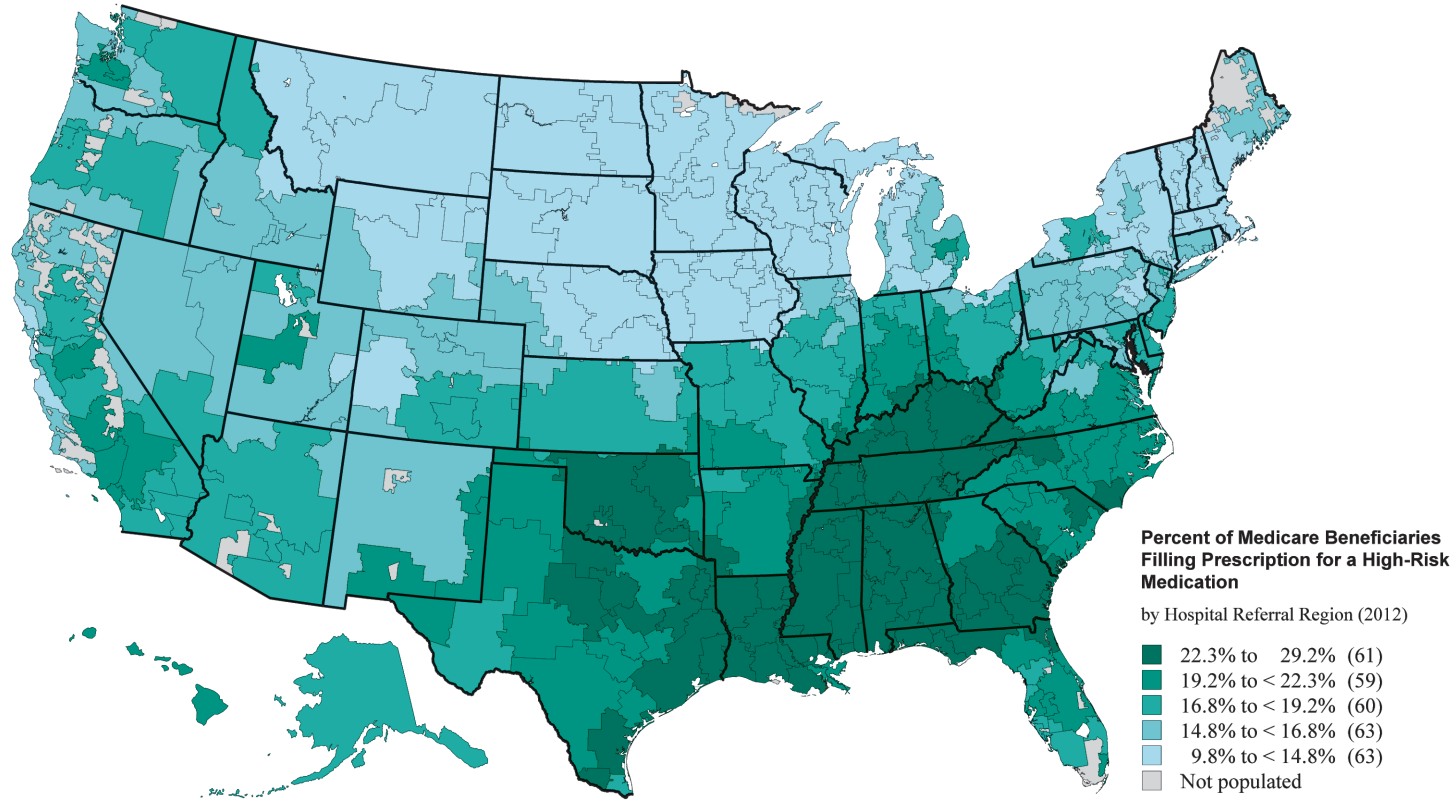


	2006	2009	2012
U.S. average	32.2%	27.9%	18.4%

Figure 16. Percent of Medicare beneficiaries filling a prescription for a high-risk medication, by hospital referral region (2006, 2009, 2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for 2006, 2009, and 2012. Rates are adjusted for age, sex, and race.

The percentage of Medicare beneficiaries that filled at least one prescription for a high-risk medication decreased between 2006 and 2012, from 32.2% of beneficiaries to 18.4%, a decline of almost 43% (Figure 16). The drop between 2009 and 2012 is largely due to the removal of propoxyphene from the U.S. market in late 2010. Use of high-risk medications decreased in every hospital referral region, but rates of use of these drugs continued to vary more than threefold in 2012. About 10% of Medicare beneficiaries filled a prescription for a high-risk medication in Rochester, Minnesota (9.8%), Sioux Falls, South Dakota (10.5%), and Mason City, Iowa (10.8%). Rates of high-risk medication use approached 30% in three Louisiana regions: Monroe (29.1%), Alexandria (28.9%), and Baton Rouge (27.5%) (Map 17). In general, these medications were much more likely to be prescribed in HRRs in the Southeast than in other parts of the country.



Map 17. Percent of Medicare beneficiaries filling a prescription for a high-risk medication, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

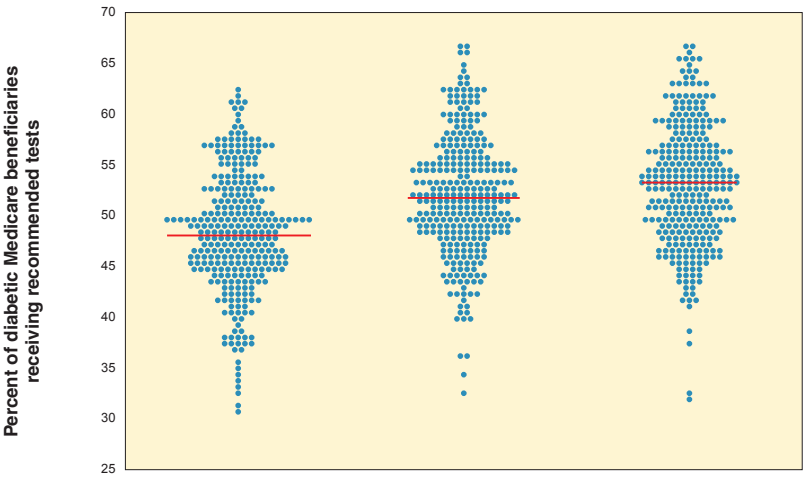
The Beers Criteria

All drugs have some potential for toxicity, but some drugs pose a particularly high risk for older patients. In 1991, geriatrician Mark Beers, MD, created a set of criteria for prescribing medications for nursing home residents, helping clinicians avoid the use of inappropriate and high-risk drugs.[39] These guidelines, known as the Beers Criteria (onlinelibrary.wiley.com/doi/10.1111/jgs.13702/abstract), have since been expanded to include recommendations for all geriatric care settings. They are considered an important decision support tool in the quest to reduce medication-related problems and adverse drug events in older patient populations, and they continue to be updated regularly. The NCQA derived its list of medications to be avoided in the elderly from the Beers Criteria. By examining regional differences in the rates at which Medicare patients are filling prescriptions for high-risk medications, this Dartmouth Atlas report can help highlight potential opportunities to improve adherence to the Beers Criteria.

Comprehensive Diabetes Testing

Diabetes is a chronic disease that affects almost 30 million Americans. About 5% of patients with the disease have type 1 diabetes, which is caused by the failure of the pancreas to produce sufficient insulin. Type 2 diabetes is far more common in the Medicare population because it is associated with older age and excess weight. Patients with type 2 diabetes still produce insulin, but their cells do not use the insulin effectively.

Clinical trials have shown that proper management of diabetes can reduce the risk of complications. To improve the care of patients with diabetes, the American Diabetes Association has recommended a set of quality measures for diabetic care, applicable to patients who are expected to live long enough to benefit. These include measures of whether a diabetic patient has received three specific diagnostic tests: a hemoglobin A1c test to measure blood sugar control; a retinal exam performed by an eye care professional to test for nerve or blood vessel damage; and blood lipids testing to measure cholesterol and triglyceride levels.

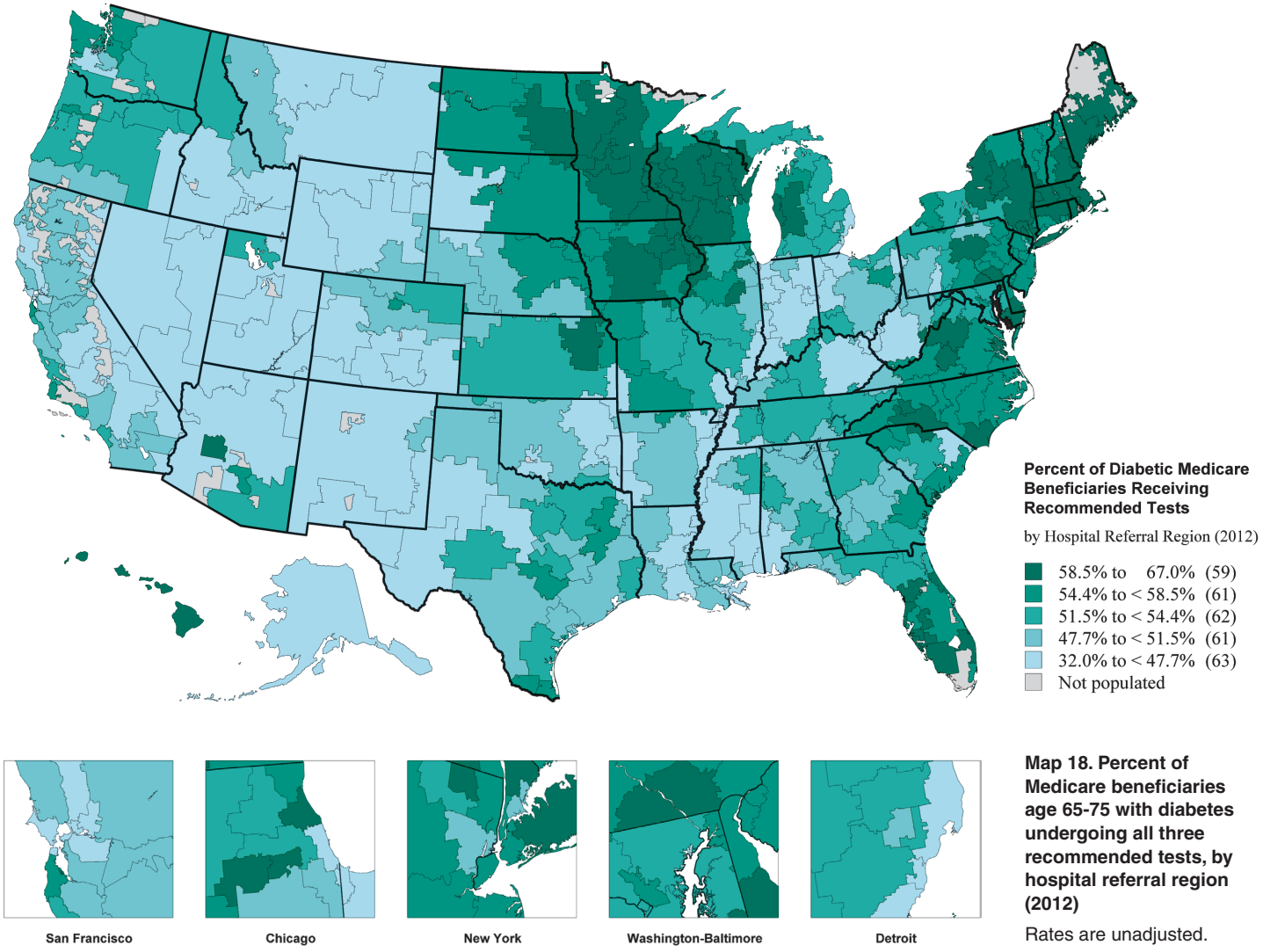


	2003-05	2007	2012
U.S. average	48.1%	51.8%	53.2%

Figure 17. Percent of Medicare beneficiaries age 65-75 with diabetes undergoing all three recommended tests, by hospital referral region (2003-05 combined, 2007, 2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for 2003-05, 2007, and 2012. Rates are unadjusted.

The percentage of diabetic Medicare beneficiaries age 65-75 receiving all three recommended tests improved between the years 2003-05 and 2012. During 2003-05, 48.1% of diabetic Medicare beneficiaries received all three tests; in 2012, 53.2% of beneficiaries were tested, an increase of more than 10% (Figure 17). Rates of diabetic testing improved in most hospital referral regions but still varied more than twofold across the country in 2012, from 32% of diabetic beneficiaries in Casper, Wyoming to 67% in Dubuque, Iowa. Other hospital referral regions with high rates of diabetic testing in 2012 included St. Cloud, Minnesota (66.6%), Muskegon, Michigan (66.1%), and the Massachusetts regions of Springfield (65.7%) and Boston (65.7%). A significantly lower percentage underwent these tests in Lafayette, Indiana (32.3%), Albuquerque, New Mexico (37.2%), and Anchorage, Alaska (38.4%) (Map 18). Diabetic testing rates were generally higher in HRRs in the Northeast, upper Midwest, and Florida than in other parts of the country.



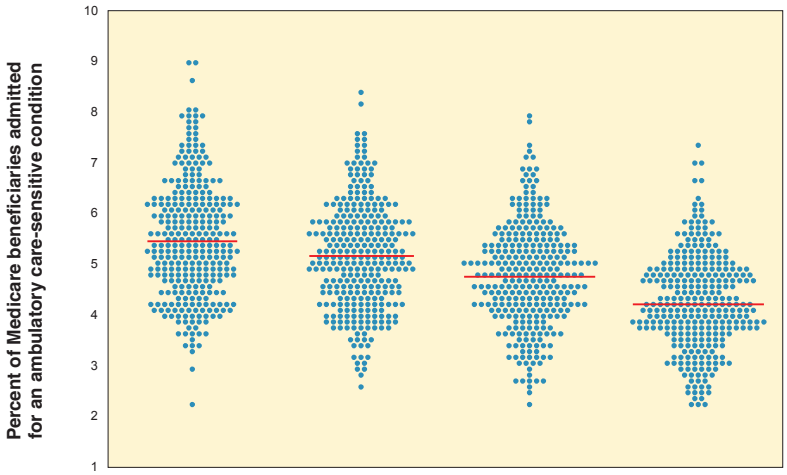
Map 18. Percent of Medicare beneficiaries age 65-75 with diabetes undergoing all three recommended tests, by hospital referral region (2012)

Rates are unadjusted.

Preventable Hospital Admissions

Many hospital admissions are for medical conditions—either acute illnesses or worsening chronic conditions—for which hospitalization may not have been necessary with better outpatient management. Studies have shown that access to primary or other ambulatory (outpatient) care may prevent some of these hospitalizations.[40-42] Discretionary admissions to the hospital may seem safer for the patient, make it easier for the physician to keep track of the patient, or be the only option for a patient with inadequate home or community-based support. Even so, hospitalization poses risks to patients, including infection and error, and can impose substantial costs on their families and on society. Researchers and clinicians have identified a group of diagnoses, such as diabetes, pneumonia, and congestive heart failure, referred to as "ambulatory care-sensitive conditions," that fall into this category.

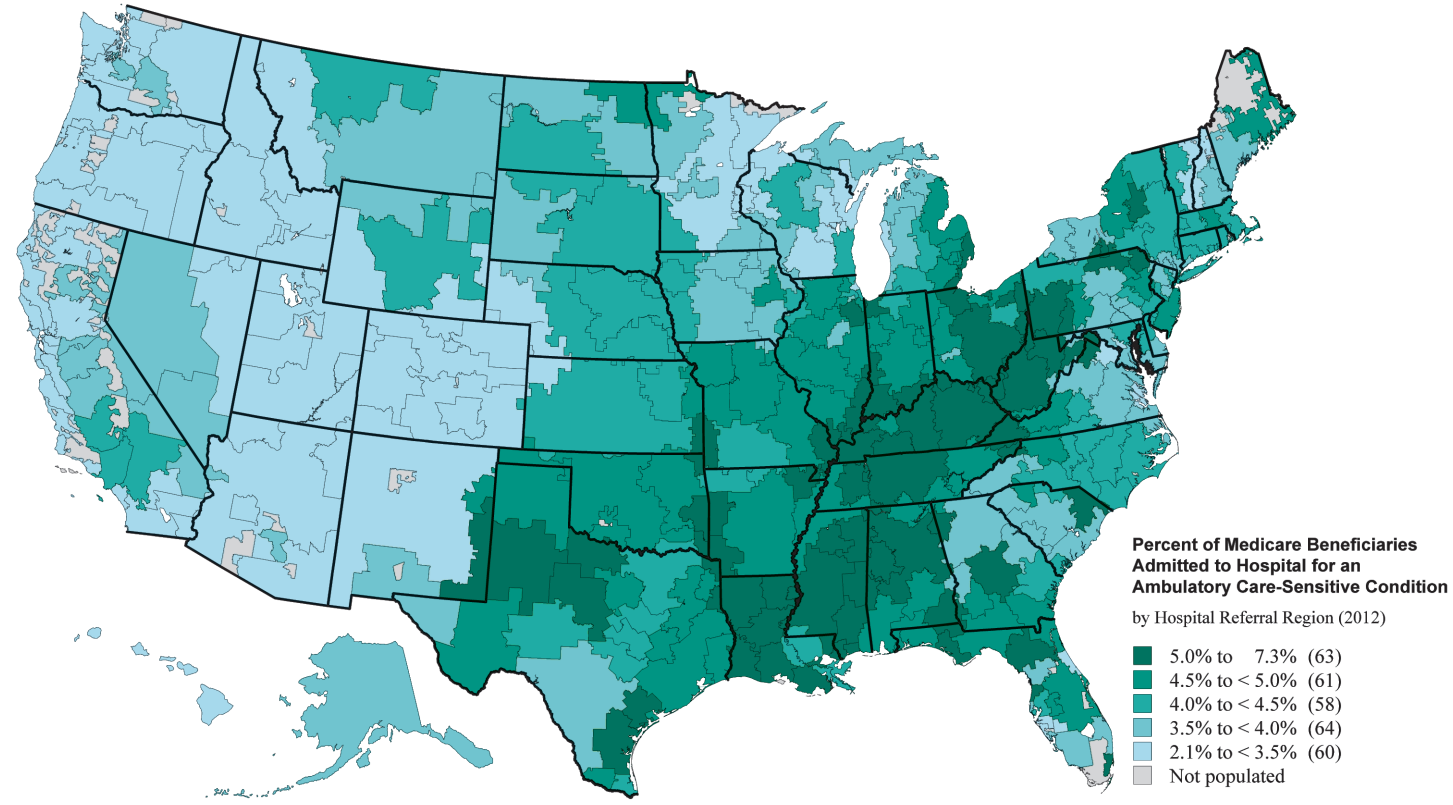
During the decade from 2003 to 2012, the percentage of Medicare beneficiaries hospitalized for ambulatory care-sensitive conditions declined 23%, from 5.5% in 2003 to 4.2% in 2012 (Figure 18). Rates declined in nearly every hospital referral region, but more than threefold variation remained in 2012. About 2% of Medicare beneficiaries experienced a potentially preventable hospitalization in the California regions of San Mateo County (2.2%), San Luis Obispo (2.2%), and Santa Barbara (2.3%); about 7% of beneficiaries were admitted for an ambulatory care-sensitive condition in Monroe, Louisiana (7.3%), Kingsport, Tennessee (7.0%), and Alexandria, Louisiana (6.9%) (Map 19).



	2003	2006	2009	2012
U.S. average	5.5%	5.2%	4.7%	4.2%

Figure 18. Percent of Medicare beneficiaries having an ambulatory care-sensitive hospital admission, by hospital referral region (2003, 2006, 2009, 2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for 2003, 2006, 2009, and 2012. Rates are adjusted for age, sex, and race.



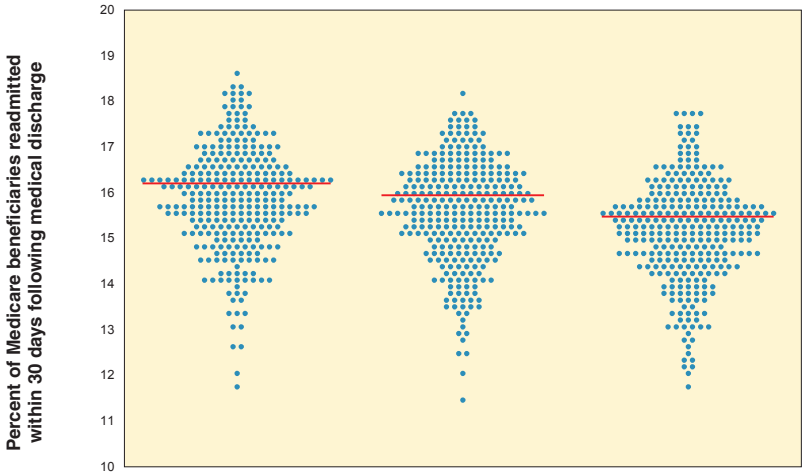
Map 19. Percent of Medicare beneficiaries having an ambulatory care-sensitive hospital admission, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

Thirty-Day Readmission Rates

Hospital readmissions often signify gaps in the quality of care provided to Medicare patients. While some readmissions are anticipated or planned to complete care, most are unexpected. Many are caused by inadequate discharge planning, poor care coordination between hospital and community clinicians, and/or the lack of effective longitudinal community-based care. Patients with chronic conditions and high-need patients are at particularly high risk for readmission.[43,44] Public and hospital attention to readmissions has recently increased with the implementation of the Affordable Care Act's requirement for the Centers for Medicare and Medicaid Services (CMS) to penalize hospitals with higher than expected readmission rates. Reductions in Medicare reimbursement began in October 2012 for over 2,000 hospitals with high readmissions for pneumonia, congestive heart failure, and acute myocardial infarction.

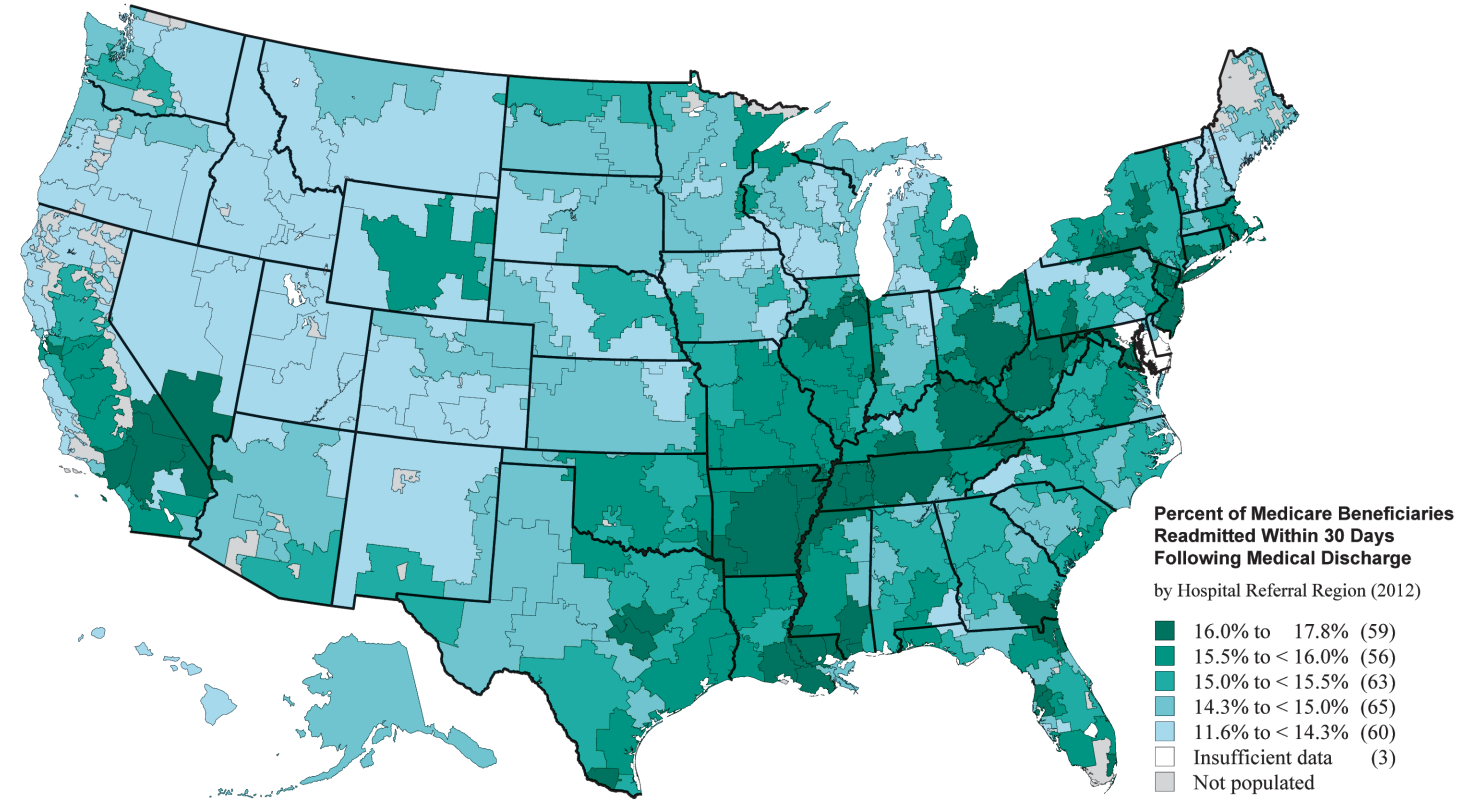
Despite the increased focus on readmissions, the average percentage of Medicare beneficiaries readmitted within 30 days of discharge for a medical condition declined only slightly—less than 5%—between 2008 and 2012, decreasing from 16.2% to 15.5% (Figure 19). The rate increased in 49 hospital referral regions. In 2012, about 12% of beneficiaries discharged for medical reasons were readmitted within 30 days in Bend, Oregon (11.7%), Petoskey, Michigan (12.0%), Muskegon, Michigan (12.2%), and Grand Junction, Colorado (12.2%). Almost 18% of discharged medical patients were readmitted in Johnstown, Pennsylvania (17.8%), Royal Oak, Michigan (17.7%), Slidell, Louisiana (17.7%), and Dearborn, Michigan (17.7%) (Map 20).

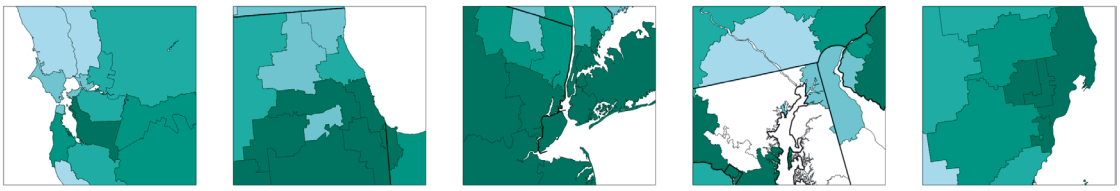


	2008	2010	2012
U.S. average	16.2%	15.9%	15.5%

Figure 19. Thirty-day readmission rate following discharge for medical conditions among Medicare beneficiaries, by hospital referral region (2008, 2010, 2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for 2008, 2010, and 2012. Rates are adjusted for age, sex, and race.





Map 20. Thirty-day readmission rate following discharge for medical conditions among Medicare beneficiaries, by hospital referral region (2012)

Rates are adjusted for age, sex, and race.

High Cost, High Need: Older Adults with Multimorbidity and Dementia

Life expectancy in the United States is 78.8 years.[45] High life expectancy is a marker of a healthy population with healthy behaviors and robust public health and health care initiatives. The types of illnesses a population must contend with shift toward chronic diseases as life expectancy rises. The risk of chronic diseases, such as congestive heart failure, diabetes, or chronic obstructive lung disease, increases strongly as a person ages. Similarly, the risk of dementia, a condition in which mental decline becomes severe enough to interfere with daily life (such as Alzheimer's disease), increases substantially with age. At advanced age, many older adults have not one, but two or more of these age-related conditions. These beneficiaries have high medical needs and often other requirements, such as support to remain independent in the community.

Medicare spending is concentrated in the small percentage of older adults with multiple chronic medical conditions[18,19,43,44,46,47] and those who have dementia.[48,49] These older, high-need patients are at risk of having their unique and complex requirements overlooked in a health care environment rapidly changing to reduce the costs of care.

The Affordable Care Act and Older Adults

The Affordable Care Act (ACA) includes a series of Medicare cost savings reforms that have important implications for the care of older adults. The two main themes embodied in the ACA leading to the development of new payment models are: 1) a focus on reimbursing providers for quality rather than quantity of services; and 2) new reimbursement strategies that encourage care coordination.

In the traditional fee-for-service (FFS) model, health care providers are paid for a service irrespective of the quality with which that service is provided. In Medicare, one example of how that approach is being modified is the way readmissions within 30 days of a hospital discharge are now being addressed. Under FFS, hospitals can receive payment for both the initial hospitalization and the readmission—an arrangement that limits the financial incentive to prevent readmission. Beginning in 2012, hospitals with excess readmissions began receiving penalties. Data in this report show that readmission rates started to decline prior to the penalties, as hospitals were likely preparing for this new policy. There are other programs that give bonuses to physicians for reporting on quality measures.

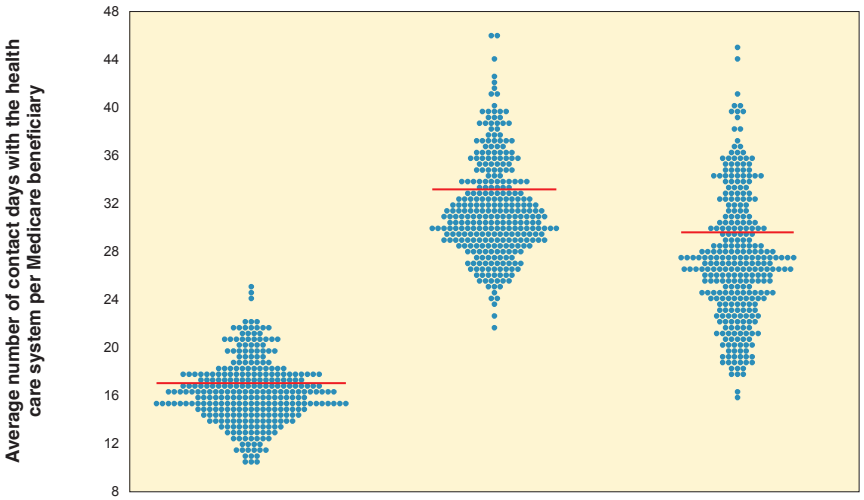
Better care coordination is seen as an opportunity to improve management of the complex, chronically ill patients who account for a large portion of spending. In the primary care setting, new models pay primary care providers for care coordination activities that go beyond what occurs during a visit. To encourage better coordination after some surgical hospital stays, providers can now receive a bundled payment that covers the hospital stay as well as the period after the stay.

Accountable care initiatives combine both themes by identifying the population treated by an accountable care organization and rewarding the providers if the quality of care the population receives hits a threshold and the total costs of care are reduced. For older adults who receive care across many settings—hospitals, clinics, in the home, etc.—this model creates an incentive for the care to be coordinated across all settings. These payment models were just beginning during the year examined in this report. Over time, monitoring the impact of these programs on older adults, especially those who rely heavily on health care—such as people with dementia or multiple chronic conditions—will be important.

Contact with the Health Care System

People with multimorbidity and dementia are heavy users of health care compared to the general Medicare population, as shown by their high number of contact days. Among all Medicare beneficiaries, the average number of days patients were in contact with the health care system was 17.1 days in 2012, compared to 33.2 among people with multiple chronic conditions and 29.6 among people with dementia (Figure 20).

Patients in Manhattan and East Long Island, New York had the highest number of contact days with the health care system in 2012 among the 306 hospital referral regions in the U.S. East Long Island patients had the highest average number of contact days among all beneficiaries (24.9) and dementia patients (44.9), and the second highest number of days for patients with multiple chronic conditions (46.2). Patients in Manhattan had a slightly higher average number of contact days among patients with two or more chronic conditions (46.2), and the second highest rate for all beneficiaries (24.6) and patients with dementia (43.9). Patients living in Marquette, Michigan experienced far fewer days of contact with health providers, ranking lowest among patients with multiple chronic conditions (21.5) and dementia (16.0), and #305 out of 306 HRRs for all beneficiaries (10.3).



	All beneficiaries	Multiple chronic conditions	Dementia
U.S. average	17.1	33.2	29.6

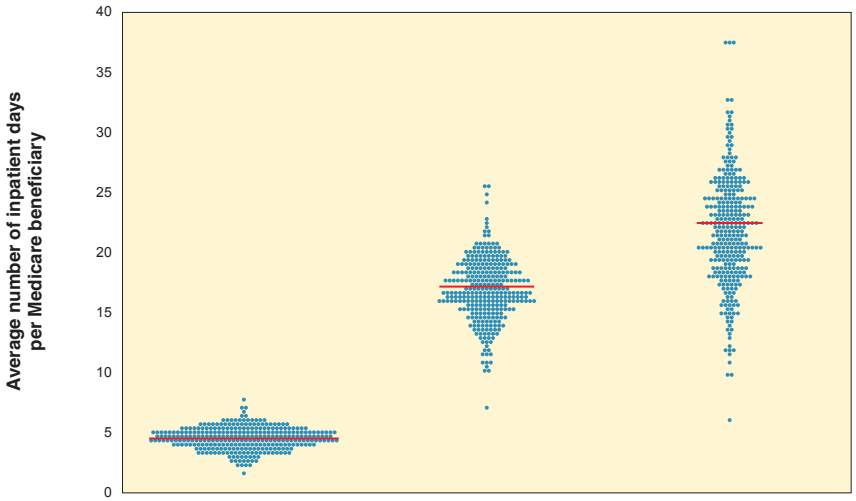
Figure 20. Average number of days that Medicare beneficiaries in three patient cohorts were in contact with the health care system, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for all beneficiaries, patients with two or more chronic conditions, and dementia patients. Rates are adjusted for age, sex, and race.

Use of Inpatient Services

The main reason Medicare spending is high for people with multimorbidity and dementia is their frequent use of hospital and SNF services. The use of inpatient services includes all causes of hospitalization, including ambulatory care-sensitive admissions and readmissions, as well as the post-hospital rehabilitation period that many of these high-need older adults require in order to return to their homes.

Among all Medicare beneficiaries, the average number of inpatient days was 4.6 days in 2012, compared to 17.2 among people with multiple chronic conditions and 22.5 among people with dementia (Figure 21). Three Louisiana regions—Monroe, Alexandria, and Shreveport—had inpatient day rates among the top five for all three cohorts in 2012. Monroe ranked highest on the measure of inpatient days among all beneficiaries (7.6) and dementia patients (37.7), and second highest for patients with multiple chronic conditions (25.4). Alexandria ranked second for inpatient days among all beneficiaries (7.2), third for dementia patients (37.3), and fourth for patients with two or more chronic conditions (24.1); meanwhile, Shreveport was third for all beneficiaries (7.2), second for dementia patients (37.4), and highest for patients with multiple conditions (25.6). By contrast, two Oregon regions (Bend and Salem) were among the regions with the fewest inpatient days across all cohorts.



	All beneficiaries	Multiple chronic conditions	Dementia
U.S. average	4.6	17.2	22.5

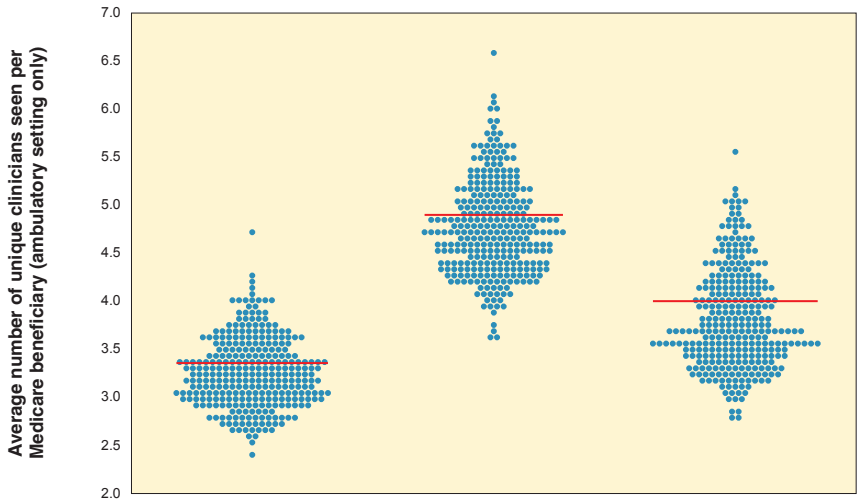
Figure 21. Average number of days spent in an inpatient setting per Medicare beneficiary in three patient cohorts, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for all beneficiaries, patients with two or more chronic conditions, and dementia patients. Rates are adjusted for age, sex, and race.

The Challenge of Care Coordination

One strategy that may reduce the burden of hospitalization is providing well-coordinated outpatient care to prevent exacerbations of chronic illness that lead to hospital admissions and readmissions. Coordination of care is particularly challenging among people with multimorbidity, where each additional condition increases the complexity of care. People with multiple chronic conditions report having more difficulty accessing services (especially mental health and medical specialists), getting duplicate tests and procedures, and having problems getting information from multiple providers, who often give conflicting diagnoses, medication recommendations, and instructions.[13,50] Coordination for people with dementia can also be challenging because the individual with the condition may not have the ability to perform self-care tasks or manage information across providers.

The number of unique clinicians a person visits in the outpatient setting highlights the challenge and complexity people with multimorbidity and dementia can face. People with multimorbidity and dementia see more clinicians per year than the general Medicare population; among all Medicare beneficiaries, the average number of unique clinicians seen in 2012 was 3.4, compared to 4.9 among people with multiple chronic conditions and 4.0 among people with dementia (Figure 22).



	All beneficiaries	Multiple chronic conditions	Dementia
U.S. average	3.4	4.9	4.0

Figure 22. Average number of unique clinicians seen per Medicare beneficiary in three patient cohorts, by hospital referral region (2012)

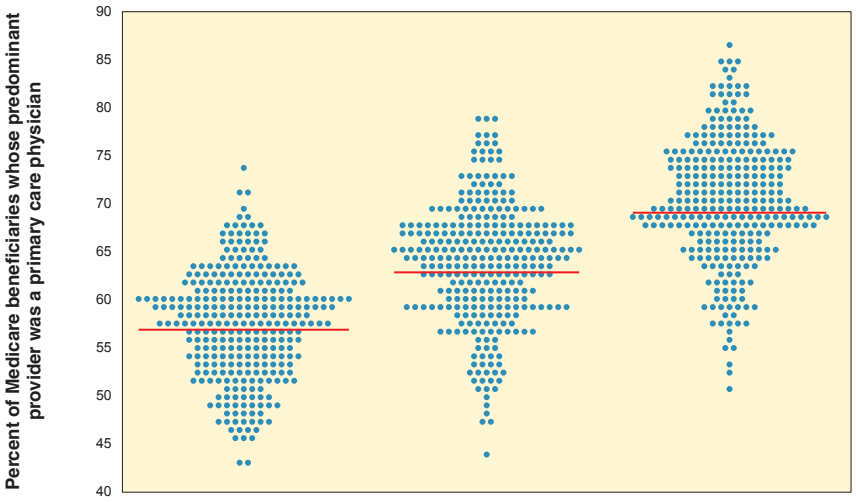
Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for all beneficiaries, patients with two or more chronic conditions, and dementia patients. Rates are adjusted for age, sex, and race.

Patients living in two Florida regions—Fort Lauderdale and Fort Myers—had the largest number of clinicians involved in their ambulatory care in 2012. Fort Lauderdale ranked the highest among the 306 hospital referral regions for the number of unique clinicians involved in the care of all beneficiaries (4.7), dementia patients (5.5), and patients with multiple chronic conditions (6.6). Fort Myers had the second highest numbers for all three cohorts (4.2, 5.1, and 6.1, respectively). Patients living in Bangor, Maine saw many fewer clinicians per year (2.4). This was true for patients with dementia (2.8, ranked #305) and with two or more chronic conditions (3.7, #304). The pattern was less consistent in other regions. Bloomington, Illinois was ranked in the top third (#86) for the number of unique clinicians seen by all beneficiaries and patients with multiple chronic conditions, but near the bottom (#244) for patients with dementia.

Opportunities in Primary Care for Care Coordination and Advance Care Planning

Primary care offices across the country are organizing themselves as patient-centered medical homes to serve a more central role in patients' health care experiences. With a central role, primary care clinicians can provide the guidance and assistance critically needed for people with multimorbidity and dementia. Currently in the Medicare fee-for-service system, beneficiaries may see any physician they choose. Primary care physicians (family practice physicians, internists, and geriatricians) may not be the predominant providers of ambulatory care, especially for people with multimorbidity and dementia who may also see many specialists.

Among all Medicare beneficiaries, the percent whose predominant provider of care in 2012 was a primary care physician was 56.9%, compared to 62.8% among people with multiple chronic conditions and 69.1% among people with dementia (Figure 23). Patients in York, Pennsylvania and McAllen, Texas were the likeliest to have a primary care clinician (or clinicians) as their predominant care provider in 2012. York, Pennsylvania was ranked the highest for the predominance of primary care among all beneficiaries (73.4%), third among patients with multiple chronic conditions (78.4%), and fourth among patients with dementia (84.5%). McAllen ranked highest for patients with two or more chronic conditions (78.9%), and second for all beneficiaries (70.9%) and dementia patients (84.9%).



	All beneficiaries	Multiple chronic conditions	Dementia
U.S. average	56.9%	62.8%	69.1%

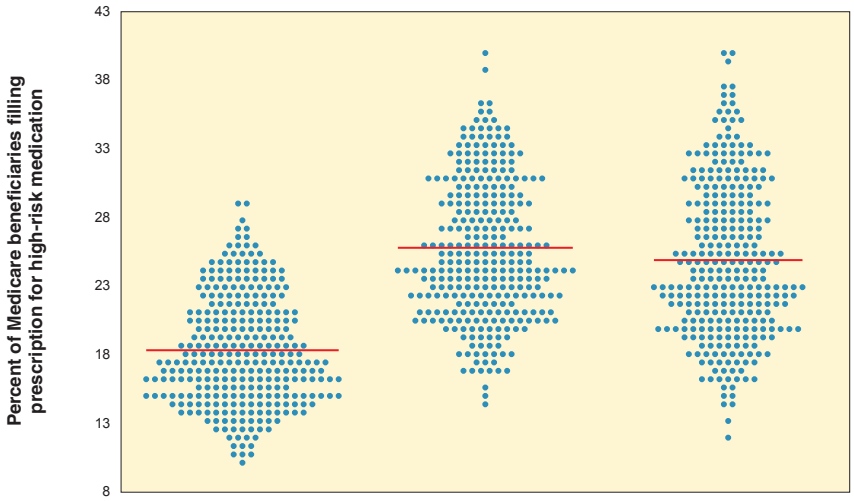
Figure 23. Percent of Medicare beneficiaries in three patient cohorts who had a primary care physician as their predominant provider of care, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for all beneficiaries, patients with two or more chronic conditions, and dementia patients. Rates are adjusted for age, sex, and race.

Urgent Need for Improvement in Medication Management

Older adults are at increased risk for adverse drug events.[51,52] They take more medications and have vulnerabilities that make them more susceptible to being harmed.[34] This is particularly true for people with multimorbidity and dementia, who often take many medications to address their multiple problems. Reducing polypharmacy requires careful consideration of which drugs to start or stop when a person has several chronic medical and mental conditions.[53,54] At minimum, avoidance of drugs known to be high-risk in the elderly is important for this population.

People with multimorbidity and dementia are at a higher risk of being prescribed an inappropriate medication compared to the general Medicare population. In 2012, one in four people with multimorbidity or dementia were exposed to at least one high-risk medication (Figure 24). Among the 306 hospital referral regions, patients in the Louisiana regions of Monroe and Alexandria were the most likely to fill a prescription for a high-risk medication in 2012. Monroe ranked highest for all three patient cohorts, with 29.1% of all beneficiaries, 40.3% of patients with multiple chronic conditions, and 40.1% of patients with dementia filling prescriptions for high-risk medications. Alexandria was ranked second for all beneficiaries (28.9%) and patients with two or more chronic conditions (38.8%), and third for dementia patients (39.4%). Rochester, Minnesota was ranked the lowest overall (9.8%) and for dementia patients (12.1%), and #305 for patients with multiple chronic conditions (14.9%).



	All beneficiaries	Multiple chronic conditions	Dementia
U.S. average	18.4%	25.8%	24.9%

Figure 24. Percent of Medicare beneficiaries in three patient cohorts filling a prescription for a high-risk medication, by hospital referral region (2012)

Each blue dot represents one of 306 hospital referral regions in the United States. Red lines indicate the national averages for all beneficiaries, patients with two or more chronic conditions, and dementia patients. Rates are adjusted for age, sex, and race.

A Path Forward

The world is experiencing unprecedented aging. As more children survive into adulthood, and prevention and treatment for acute and chronic illnesses reach more of the world's population, the proportion over age 60 has risen from 9.2% in 1990 to 11.7% in 2013. With that success the United States, like other developed countries, is seeing remarkable growth in the size and proportion of the population made up of older adults as the Baby Boomers have begun to reach 65.[1] The number of people age 65 and older in the U.S. will almost double from 43.1 million in 2012 (1 in 7 Americans) to 83.7 million in 2050 (1 in 5 Americans).[1] And while today approximately 3.7% of Americans are age 80 and over, by 2050 that proportion will be approximately 7.7%.[1]

At a time when large demographic changes are occurring, we are also in the midst of great health care system change, with the goal of improving the quality of care that is delivered at a cost that is sustainable for the future. Given the large simultaneous changes, we have an opportunity to incorporate attention to the special needs and concerns that come with an aging population into our redesign of health care delivery and policy.

The information presented in this Dartmouth Atlas report shines a light on who the older adults of today are and how their care differs across the United States. While there are many data points in this report, a major lesson to take away is the great diversity of populations and approaches to care across the country. There are places that lead the nation in the percentage of their populations age 75 and older or in the amount of racial diversity within their populations of older adults. These places may serve as an example for other markets that will be similar 10 or 15 years down the road. Similarly, some markets have a large dual-eligible population with different patterns in terms of how much care is delivered in nursing homes or other settings. The ability to identify others who may be ahead of the curve on any particular metric can be leveraged by a learning health care system.

Change in health care requires a compelling story driven by data to rally the support of clinicians, patients, and policy makers around the need for change. Our current ability to improve care for older adults has been hampered by large gaps in our knowledge about how care is delivered for high-need elders in communities across the United States. This report starts to close the gap by providing data and information that is more meaningful for older adults and their families. How many days a year does one want to spend going to the doctor, having tests, or staying in a hospital? Is there a doctor who is paying attention to coordinating care and attending to preventive and advance care planning needs? Are there alternatives to moving into a nursing home when the need for support increases?

This report also shows that there are already areas of improvement. The key observation about these improvements is that they happened through different mechanisms. Some improvements occurred through the efforts of clinical providers changing processes of care, such as implementation of better discharge planning and coordination to reduce readmissions, encouraged by changes in payment incentives. Others were through regulatory changes, such as the removal of high-risk medications from the market when there was a strong case that the harm outweighed the benefits.[55] Still other changes will be through the efforts of older adults themselves and their families as they become more informed and engaged in the decisions made about their health care, such as how the last days and months of their lives will be lived.

Finally, there are specific groups of older adults who are vulnerable by virtue of their diseases, either by having multiple conditions or by having dementia. These older adults experience the highest levels of contact with the health care system. Understanding how they are affected by changes in health care delivery or policy, and whether they experience the same improvements as other less vulnerable groups, is a critical challenge as we move forward. Ongoing monitoring and reporting is one piece of a strategy to ensure that the benefits and gains of health system change reach the people who may need them most.

The aging of the population demands that we improve the delivery of care and improve policies to benefit the older adults of today—our parents, grandparents, and neighbors—and ourselves in the future.

Methods

The methods used in this report were developed over a number of years and have been described in detail in peer-reviewed publications (www.dartmouthatlas.org/publications/articles.aspx) and in previous editions of the Dartmouth Atlas (www.dartmouthatlas.org/publications/reports.aspx). The data are drawn from the enrollment and claims data (100% sample) of the Medicare program. The analyses presented in this report focus on either the entire Medicare population between the ages of 65 and 99 (demographic analyses); or a subset of that population, including those receiving fee-for-service care (excluding beneficiaries enrolled in risk-bearing HMOs) (utilization analyses), those with specific disease conditions (cohort-restricted analyses), or those at risk for a specific procedure or service (screening analyses).

The hospital referral regions (HRRs) used in this report represent health care markets for tertiary medical care. They are built from hospital service areas (HSAs), local health care markets for hospital care. An HSA is a collection of ZIP codes whose residents received most of their hospitalizations from the hospitals in that area in 1992-93. HSAs were defined by assigning ZIP codes to the hospital area where the greatest proportion of their Medicare residents were hospitalized. Minor adjustments were made to ensure geographic contiguity. Most hospital service areas contained only one hospital. The process resulted in 3,436 HSAs. Hospital referral regions were defined by assigning HSAs to the region where the greatest proportion of major cardiovascular procedures were performed, with minor modifications to achieve geographic contiguity, a minimum population size of 120,000, and a high localization index. Each HRR contained at least one hospital that performed major cardiovascular procedures and neurosurgery. The process resulted in 306 HRRs. More information on how HSAs and HRRs were defined is available in our Appendix on the Geography of Health Care in the United States (www.dartmouthatlas.org/downloads/methods/geogappdx.pdf).

Demographic Measures

Age and Race

The percentage of the U.S. population age 75 and over was determined using the 2010 U.S. Census. The numerator comprised people age 75 and older; the denominator was the entire U.S. population. The numerators for the percentage of the Medicare population age 65-99 that was Black or Hispanic were determined using the RTI-RACE field in the Medicare Denominator file (Black=2, Hispanic=5). The denominator included all Medicare beneficiaries age 65-99.

Fee-for-Service Status

Medicare beneficiaries were excluded from our utilization analyses if they had any enrollment in risk-bearing HMOs during 2012. The numerator for the percentage

of beneficiaries receiving fee-for-service care was determined using the twelve HMO indicator fields—one for each month of the year—in the Denominator file (HMOIND12=0 or 4 in each month). The denominator included all Medicare beneficiaries age 65-99.

Nursing Home Residence

Nursing home residence was determined using the Minimum Data Set (MDS) file, which includes records for all residents in Medicare or Medicaid-certified nursing homes. A beneficiary had to have a minimum of 100 days in a nursing home setting to be included in the numerator. The denominator included all Medicare beneficiaries age 65-99; for the percentage of dual-eligible beneficiaries living in nursing homes, the denominator was restricted to those with both Medicare and Medicaid eligibility (see below).

Dual Eligibility

Eligibility for Medicaid in addition to Medicare was determined using the Denominator file. A beneficiary must have had one or more months of dual Medicare/Medicaid coverage during the year to be included in the numerator, determined by the twelve dual-eligible fields, one for each month of the year (DUAL_01-DUAL_12=02, 04, or 08). The denominator included all Medicare beneficiaries age 65-99.

Nursing Home Residence According to State Spending for Home and Community-Based Services

To categorize low, medium, or high home and community-based services spending relevant for dual-eligible Medicare beneficiaries age 65-99, we used the 2011 total aged and aged/disabled state Medicaid Section 1915(c) home and community-based services waivers expenditures (kff.org/health-reform/state-indicator/aged-ageddisabled-hcbs-expenditures/) as the numerator, and the number of aged and disabled Medicaid enrollees (kff.org/medicaid/state-indicator/distribution-of-medicaid-enrollees-by-enrollment-group/) as the denominator to form per enrollee spending. The 45 states and the District of Columbia were categorized into the groups shown in Table 2.

Table 2. States stratified by level of spending on home and community-based services (2011)

Level of HCBS spending	Enrollee states
Low ($33 to < $435)	AL, AR, CA, FL, KY, LA, ME, MA, MI, MS, MO, NV, NM, NY, ND, SD
Middle ($435 to < $889)	CT, DE, GA, IL, IN, IA, KS, MD, NJ, NC, PA, SC, TX, UT, WV
High ($889 to $2,508)	AK, CO, DC, ID, MN, MT, NE, NH, OH, OK, OR, VA, WA, WI, WY

The remaining five states had no 1915(c) spending waivers for aged or aged/disabled populations in 2011. Arizona, Hawaii, Rhode Island, and Vermont delivered services to aged and disabled groups through 1115 waivers, and Tennessee had no waiver of any kind for these populations.

Interactions with the Health Care System

Contact Days

For this measure, the denominator comprised the Medicare population age 65-99 on January 1, 2012 that was eligible for Medicare Parts A and B. Patients enrolled in risk-bearing HMOs at any time during the year were excluded. Age, gender, race, and eligibility were determined using the Denominator file. The numerator consisted of contact days with the health care system—acute care hospital stays, ambulatory visits to clinicians, procedures, tests, and imaging—indicated by a claim in either the Medicare Provider Analysis and Review (MedPAR) file or the Carrier (Physician/Supplier Part B claims) file. If more than one claim occurred on the same date, the day was only counted once. Rates were adjusted for age, sex, and race using the indirect method, using the national Medicare population as the standard.

Predominant Provider of Care

The denominator for this measure comprised the Medicare population age 65-99 on January 1, 2012 eligible for Medicare Parts A and B. Patients enrolled in risk-bearing HMOs at any time during the year were excluded. The numerator was determined by selecting patients for whom a plurality of ambulatory visits (CPT codes 99201-99205, 99211-99215, 99381-99387, 99391-99397, 99304-99350, G0402, G0438, and G0439) to clinicians were to the following specialties: family/general practice, internal medicine, and geriatrics. Rates were adjusted for age, sex, and race using the indirect method.

Number of Unique Clinicians

The denominator for this measure was the Medicare population age 65-99 on January 1, 2012 that was eligible for Medicare Parts A and B. Patients enrolled in risk-bearing HMOs at any time during the year were excluded. The number of unique clinicians (physicians and nurse practitioners) was determined by the National Provider Identifier (NPI), using bills from the Carrier file and the Outpatient file (to obtain claims from Rural Health Centers and Federally Qualified Health Centers where a specialty was assigned). The occurrence of a visit in an ambulatory setting was determined using the following CPT codes: 99201-99205, 99211-99215, 99381-99387, 99391-99397, 99304-99350, G0402, G0438, and G0439. Rates were adjusted for age, sex, and race using the indirect method.

Annual Wellness Visits

The occurrence of an annual wellness visit was indicated by the presence of a claim with HCPCS codes G0438 or G0439 in the Carrier file. The denominator included the Medicare population age 65-99 on January 1, 2012 that was eligible for Medicare Parts A and B. Patients enrolled in risk-bearing HMOs at any time during the year were excluded. Rates were adjusted for age, sex, and race using the indirect method.

Days in Hospital or Skilled Nursing Facility

Inpatient day rates were determined using the MedPAR inpatient claims summary file for 2012. The denominator was the Medicare population enrolled in Medicare Parts A and B and age 65-99 on January 1, 2012. Patients enrolled in risk-bearing HMOs at any time during the year were excluded. Inpatient day rates were adjusted using the indirect method for age, sex, and race.

Screening and End-of-Life Care

Prostate Cancer Screening

PSA screening was defined as any, but only one occurrence per patient during 2012 of CPT codes G0103 and 84153. The denominator consisted of male Medicare enrollees age 75-99 on January 1, 2012 who were eligible for Medicare Parts A and B and not enrolled in risk-bearing HMOs at any time during the year. Excluded from the analysis were men who had a PSA test for a presumed screening indication, men who had any history of prostate disease (prostate cancer, prostate surgery, or diagnosis of elevated PSA in the prior three years), and men who had prostate cancer-like symptoms in the three months before a PSA test based on diagnostic codes billed on visits and hospitalizations. PSA screening rates are not adjusted; because the measure is already restricted by age and sex, statistical adjustments to correct for underlying population differences are not relevant.

Breast Cancer Screening

Screening mammograms were defined as any, but only one occurrence per patient during 2012 of the following codes: ICD-9 diagnosis codes V76.11, V76.12 with CPT codes 77052, 77057, G0202. The denominator comprised female Medicare beneficiaries age 75-99 on January 1, 2012 who were Parts A and B eligible and not enrolled in risk-bearing HMOs at any time during the year. Mammography rates were not adjusted; because the measure is already restricted by age and sex, statistical adjustments to correct for underlying population differences are not relevant.

Late Hospice Referral at the End of Life

The denominator for this measure comprised all Medicare beneficiaries who died between the ages of 66 and 99 during 2012. Beneficiaries without continuous Part A and B coverage in the last six months of life or who were enrolled in risk-bearing HMOs were excluded. Among these decedents, late initiation of hospice service (within three or fewer days of death) was determined using the SFROMDT field in the Hospice file. Rates were adjusted for age, sex, and race using the indirect method.

Days Spent in the ICU at the End of Life

For this measure, the denominator was the Medicare population age 65-99 who died during 2012 with full Part A entitlement and no HMO enrollment during the measurement period. Average days spent in the ICU were computed using only the portion of the event (ICU stay) falling within the six-month period prior to death. ICU days were indicated by the following indicators in the MedPAR claim: ICARECNT (intensive care day count), CRNRYDAY (coronary care day count). Rates were adjusted for age, sex, and race using the indirect method.

Feeding Tube Placement among Patients With Dementia

For this measure, the denominator was the Medicare population age 65-99 who died during 2012 with full Part A and B entitlement and no HMO enrollment during the measurement period with a diagnosis of dementia (see below). The placement of a feeding tube during the last six months of life was indicated by the following codes: ICD procedure codes 43.1, 43.11, 43.19, 44.32, 46.32, 46.39; CPT codes 43750, 43246, 44372, 44373, 74350, 43832, 43830, 43653, 49440, 49441, 49446.

Areas Showing Progress

Use of High-Risk Medications

High-risk medication use was measured for Medicare beneficiaries who were age 65-99 on January 1 of the measurement year enrolled in Parts A and B and also continuously enrolled in a stand-alone Part D plan (based on a 40% random sample). Patients enrolled in risk-bearing HMOs at any time during the year and patients with hospice claims were excluded. High-risk medications examined were those identified on the HEDIS list by the NCQA as generally conferring more risk than benefit in older people (Table 3).

Table 3. HEDIS Measures of Potentially Harmful Drug Use in Patients Over Age 65

Description	Prescription		
Antianxiety (includes combination drugs)	• Aspirin-meprobamate	• Meprobamate	
Antiemetics	• Scopolamine	• Trimethobenzamide	
Analgesics (includes combination drugs)	• Ketorolac		
Antihistamines (includes combination drugs)	• APAP/dextromethorphan/diphenhydramine • APAP/diphenhydramine/phenylephrine • APAP/diphenhydramine/pseudoephedrine • Acetaminophen-diphenhydramine • Carbetapentane/diphenhydramine/phenylephrine • Codeine/phenylephrine/promethazine • Codeine-promethazine • Cyproheptadine	• Dexchlorpheniramine • Dexchlorpheniramine/dextromethorphan/PSE • Dexchlorpheniramine/guaifenesin/PSE • Dexchlorpheniramine/hydrocodone/phenylephrine • Dexchlorpheniramine/methscopolamine/PSE • Dexchlorpheniramine-pseudoephedrine • Dextromethorphan-promethazine • Diphenhydramine	• Diphenhydramine/hydrocodone/phenylephrine • Diphenhydramine-magnesium salicylate • Diphenhydramine-phenylephrine • Diphenhydramine-pseudoephedrine • Hydroxyzine hydrochloride • Hydroxyzine pamoate • Phenylephrine-promethazine • Promethazine
Antipsychotic, typical	• Thioridazine		
Amphetamines	• Amphetamine-dextroamphetamine • Benzphetamine • Dexmethylphenidate	• Dextroamphetamine • Diethylpropion • Methamphetamine	• Methylphenidate • Phendimetrazine • Phentermine
Barbiturates	• Butabarbital • Mephobarbital	• Pentobarbital • Phenobarbital	• Secobarbital
Long-acting benzodiazepines (includes combination drugs)	• Amitriptyline-chlordiazepoxide • Chlordiazepoxide	• Chlordiazepoxide-clidinium • Diazepam	• Flurazepam
Calcium channel blockers	• Nifedipine—short-acting only		
Gastrointestinal anti-spasmodics	• Dicyclomine	• Propantheline	
Belladonna alkaloids (includes combination drugs)	• Atropine • Atropine/CPM/hyoscyamine/PE/scopolamine • Atropine/hyoscyamine/PB/scopolamine • Atropine-difenoxin	• Atropine-diphenoxylate • Atropine-edrophonium • Belladonna • Belladonna/ergotamine/phenobarbital	• Butabarbital/hyoscyamine/phenazopyridine • Hyoscyamine • Hyoscyamine/methenam/M-blue/phenyl salicyl
Skeletal muscle relaxants (includes combination drugs)	• ASA/caffeine/orphenadrine • ASA/carisoprodol/codeine • Aspirin-carisoprodol • Aspirin-methocarbamol	• Carisoprodol • Chlorzoxazone • Cyclobenzaprine	• Metaxalone • Methocarbamol • Orphenadrine
Oral estrogens (includes combination drugs)	• Conjugated estrogen • Conjugated estrogen-medroxyprogesterone	• Esterified estrogen • Esterified estrogen-methyltestosterone	• Estropipate
Oral hypoglycemics	• Chlorpropamide		
Narcotics (includes combination drugs)	• ASA/caffeine/propoxyphene • Acetaminophen-pentazocine • Acetaminophen-propoxyphene • Belladonna-opium	• Meperidine • Meperidine-promethazine • Naloxone-pentazocine	• Pentazocine • Propoxyphene hydrochloride • Propoxyphene napsylate
Vasodilators	• Dipyridamole—short-acting only	• Ergot mesyloid	• Isoxsuprine
Others (including androgens and anabolic steroids, thyroid drugs, urinary anti-infectives)	• Methyltestosterone • Nitrofurantoin	• Nitrofurantoin macrocrystals • Nitrofurantoin macrocrystals-monohydrate	• Thyroid desiccated

Source: HEDIS 2012 Technical Specifications for Physician Measurement. National Committee for Quality Assurance, 2011.

Diabetes Testing

The denominator for this measure included Medicare enrollees age 65-75 with Parts A and B eligibility and no HMO enrollment during the measurement year with a diagnosis of diabetes (in two face-to-face encounters with different dates of service in an ambulatory setting or non-acute inpatient setting, or one face-to-face encounter in an acute inpatient or emergency room setting during measurement year or prior year). Data were based on a 20% sample of claims for 2003-05 and 100% of claims for 2007 and 2012. Recommended tests for diabetes were defined as follows:

Table 4. Codes indicating recommended tests for patients with diabetes

Recommended test	Definition
Hemoglobin A1c test	CPT codes 83036, 86037; CPT II codes 3046F, 3047F
Blood lipids test	CPT codes 80061, 83700, 83701, 83704, 83715, 83716, 83721; CPT II codes 3048F, 3049F, 3050F
Eye examination	A retinal or dilated eye exam by an eye care professional (optometrist or ophthalmologist) in the measurement year*; or a negative retinal exam (no evidence of retinopathy: ICD-9 codes 250.50-250.53, 362.01-362.07) by an eye care professional in the year prior to the measurement year (specialty codes: 18=ophthalmology, 41=optometry) *ICD-9 procedure codes 14.1-14.59, 14.9, 95.02-95.04, 95.11, 95.12, 95.16; CPT codes 67028, 67038-67040, 67101, 67105, 67107, 67108, 67110, 67112, 67141, 67145, 67208, 67210, 67218, 67227, 67228, 92002, 92004, 92012, 92014, 92018, 92019, 92225, 92226, 92230, 92235, 92240, 92250, 92260, 99203-99205, 99213-99215, 99242-99245; CPT II codes 2022F, 2024F, 2026F, 3072F; HCPCS codes S0625, S3000

Rates for diabetes testing were not adjusted; because virtually all patients age 65-75 with diabetes should receive these tests, statistical adjustments to correct for underlying population differences are not relevant.

Preventable Hospital Admissions

"Ambulatory care-sensitive conditions" refer to hospitalizations—such as asthma, pneumonia, chronic pulmonary obstructive disease and congestive heart failure—that are potentially preventable when access to primary care is adequate. The counts of enrollees having at least one such discharge were based on the Med-PAR files for the measurement year. The denominator was the Medicare population enrolled in Medicare Part A and age 65-99 on June 30 of the measurement year. Patients enrolled in risk-bearing HMOs at any time during the year were excluded. Rates were adjusted using the indirect method for age, sex, and race using the national Medicare population as the standard. Numerator counts were based on ICD-9-CM diagnosis codes. Surgical codes were excluded to ensure that the admission was for a medical condition.

Table 5. Codes indicating discharges for ambulatory care-sensitive conditions

Condition	ICD-9-CM diagnosis codes
Convulsions	780.3x
Chronic obstructive pulmonary disease (COPD)	491xx, 492xx, 494xx, 496xx, 466.0x 466.0x only w/secondary dx 491xx, 492xx, 494xx, 496xx
Bacterial pneumonia	481xx, 482.2x, 482.3x, 482.9x, 483xx, 485xx, 486xx Excl. secondary dx 282.6x
Asthma	493xx
Congestive heart failure (CHF)	428xx, 402.01, 402.11, 402.91, 518.4x Excl. sx 00.66, 36.1x, 37.5x, or 37.7x
Hypertension	401.0x, 401.9x, 402.00, 402.10, 402.90 Excl. sx 00.66, 36.1x, 37.5x, or 37.7x
Angina	411.1x, 411.8x, 413xx Excl. sx 01-86.99
Cellulitis	681xx, 682xx, 683xx, 686xx Excl. sx 01-86.99,except if 86.0x is the first and only sx code
Diabetes	250.0x, 250.1x, 250.2x, 250.3x, 250.8x, 250.9x
Gastroenteritis	558.3, 558.41, 558.42, 558.9x
Kidney/urinary infection	590xx, 599.0x, 599.9x
Dehydration	276.5x

Thirty-Day Readmission Rates

Readmission rates were based on Medicare enrollees age 65-99 with full Part A and B coverage discharged for medical conditions, as defined by the presence of a medical DRG on the claim. Patients enrolled in risk-bearing HMOs at any time during the measurement period were excluded. Admissions for medical conditions to short-term acute or critical access hospitals were identified among the study population. Hospitalizations with the discharge status on the claim indicating expired (died in the hospital), left against medical advice, or discharged to hospice were excluded. For the remaining records, hospitalizations where the patient had any acute care hospitalizations in the 90 days prior to admission date were excluded. Transfers (defined as (1) within one-day transfer, (2) both stays had the same cohort event, and (3) both indicated transfer status) were considered as a single hospitalization. For each study period, only one hospitalization (index hospitalization) was selected for each patient (if more than one hospitalization met the criteria, one was randomly selected). Index hospitalizations with the discharge status field indicating another acute care hospital that did not meet the transfer criteria were also excluded. Patients were linked to their utilization records, and any claims from short-term acute or critical access hospitals within 30 days of the index discharge were counted.

Table 6. HCC codes defining multimorbidity and dementia

Cohort	Definition
Chronic conditions* (Must have at least two to be included in cohort)	Coronary artery disease: HCC81, HCC82, HCC83
	Cancer: HCC7, HCC8, HCC9
	Cerebral hemorrhage/stroke: HCC95, HCC96, HCC100
	Congestive heart failure: HCC80
	Connective tissue disorders: HCC38
	Chronic obstructive pulmonary disease: HCC108
	Diabetes: HCC15, HCC16, HCC17, HCC18, HCC19, HCC119
	Drug/alcohol dependence/mental illness: HCC51, HCC52
	Hematologic/thromotic disease: HCC44, RxHCC100
	HIV/AIDS: HCC1
	Immune disease: HCC45
	Liver disease: HCC25, HCC26, HCC27
	Parkinson's/Huntington's: HCC73
	Paralysis: HCC67, HCC68, HCC69
	Renal disease: HCC130, HCC131, HCC132
	Severe mental illness: HCC54, HCC55
* Abridged list of ICD-9 codes for main chronic conditions	Peripheral vascular disease: HCC105
	Dementia: RxHCC54, RxHCC55
Dementia	RxHCC54: ICD-9 diagnosis code 331.0
	RxHCC55: ICD-9 diagnosis codes 046.0, 046.11, 046.19, 046.2, 046.3, 046.71, 046.72, 046.79, 046.8, 046.9, 290.0, 290.10, 290.11, 290.12, 290.13, 290.20, 290.21, 290.3, 290.40, 290.41, 290.42, 290.43, 290.8, 290.9, 294.0, 294.10, 294.11, 294.20, 294.21, 294.8, 294.9, 330.0, 330.1, 330.2, 330.3, 330.8, 330.9, 331.11, 331.19, 331.2, 331.6, 331.7, 331.81, 331.82, 331.89, 331.9

Special Populations

Cohort Definitions

The special populations considered in this report were patients diagnosed with dementia and patients with two or more chronic conditions. Utilization measures for these patient cohorts were defined as above, with the denominators restricted to the groups defined below. The cohorts were defined using Medicare's Hierarchical Condition Categories (HCCs) and Prescription Drug Hierarchical Condition Categories (RxHCCs) as shown in Table 6.

Appendix Tables

Appendix Table 1. Demographic characteristics of older adults in Medicare (2012)

HRR name	State	Total* Medicare beneficiaries age 65-99	Percent of U.S. population age 75 and older (2010)	Percent of Medicare beneficiaries whose race was non-Hispanic white	Percent of Medicare beneficiaries whose race was black	Percent of Medicare beneficiaries whose race was Hispanic	Percent of Medicare beneficiaries receiving fee-for-service care	Percent of Medicare beneficiaries living in nursing homes	Percent of Medicare beneficiaries eligible for Medicaid
Birmingham	AL	313,857	6.2	83.0	15.9	0.4	75.7	2.8	6.6
Dothan	AL	57,000	6.7	82.7	15.9	0.7	87.5	3.7	9.3
Huntsville	AL	84,969	5.7	88.2	9.8	0.7	88.1	2.6	5.2
Mobile	AL	114,046	5.8	80.0	18.3	0.7	68.9	2.0	5.8
Montgomery	AL	58,287	5.5	70.7	27.9	0.4	77.1	2.8	7.9
Tuscaloosa	AL	32,781	5.8	76.0	23.1	0.2	91.0	3.6	9.1
Anchorage	AK	56,984	2.8	75.6	2.1	2.3	99.0	1.0	14.3
Mesa	AZ	147,951	5.2	87.6	2.1	7.1	56.1	0.3	5.9
Phoenix	AZ	391,524	5.0	82.2	2.5	10.7	67.2	0.7	9.4
Sun City	AZ	84,492	17.1	93.7	1.5	3.3	53.5	0.2	3.7
Tucson	AZ	181,840	7.1	80.2	1.8	15.2	57.9	0.5	8.3
Fort Smith	AR	53,694	6.3	90.6	1.6	1.0	78.9	3.8	12.3
Jonesboro	AR	33,891	6.5	97.3	1.7	0.4	86.2	4.6	13.0
Little Rock	AR	227,671	6.5	87.3	11.2	0.6	86.6	3.7	9.9
Springdale	AR	65,715	5.3	95.3	0.3	1.9	76.7	3.2	8.0
Texarkana	AR	37,749	6.6	82.3	14.7	0.8	86.7	4.1	11.5
Orange County	CA	377,857	5.1	67.3	1.3	13.4	52.4	1.0	16.8
Bakersfield	CA	102,141	3.9	67.0	2.8	25.6	68.6	2.0	22.0
Chico	CA	46,593	7.4	91.3	0.7	5.2	97.3	2.2	13.3
Contra Costa County	CA	127,748	5.6	75.2	4.9	9.4	52.5	1.0	9.3
Fresno	CA	118,936	4.6	63.8	3.5	26.5	70.8	1.9	21.1
Los Angeles	CA	1,011,029	5.0	48.1	9.5	25.4	54.0	1.8	26.1
Modesto	CA	99,190	5.0	73.7	2.2	19.2	70.2	1.9	18.2
Napa	CA	44,064	7.4	88.7	1.0	6.8	80.2	2.1	12.6
Alameda County	CA	165,729	5.2	53.4	12.6	11.2	52.3	1.5	17.8
Palm Springs/Rancho Mirage	CA	68,421	10.8	87.6	1.8	8.0	59.0	0.7	8.6
Redding	CA	55,416	7.0	92.7	0.6	2.9	93.7	1.8	11.5
Sacramento	CA	321,436	5.8	79.0	4.2	8.5	58.4	1.2	11.6
Salinas	CA	42,681	5.2	65.0	2.8	22.9	98.6	1.8	15.8
San Bernardino	CA	290,983	4.2	63.1	7.5	23.2	40.6	1.2	16.6
San Diego	CA	409,881	5.3	68.4	3.2	19.9	55.2	1.2	14.5
San Francisco	CA	189,923	6.5	54.0	8.4	9.4	56.0	1.5	22.3
San Jose	CA	187,957	4.9	57.0	2.0	15.2	60.3	1.3	19.6
San Luis Obispo	CA	38,155	7.4	90.5	0.6	6.0	89.1	1.4	6.8
San Mateo County	CA	106,087	6.6	65.0	3.0	12.0	56.4	0.8	12.0
Santa Barbara	CA	57,055	6.5	78.0	1.6	16.0	83.7	1.5	10.4
Santa Cruz	CA	31,251	5.0	80.0	0.7	14.9	91.7	1.7	12.5

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Santa Rosa	CA	70,418	6.6	88.6	0.9	6.5	59.0	1.2	9.3
Stockton	CA	59,696	4.6	62.3	6.5	20.0	66.3	1.9	17.2
Ventura	CA	103,616	5.5	73.4	1.5	18.1	69.2	1.3	11.7
Boulder	CO	33,258	4.3	92.1	0.6	4.7	62.4	1.4	4.1
Colorado Springs	CO	97,422	5.0	85.9	2.7	9.1	74.2	2.0	6.1
Denver	CO	297,411	4.5	84.8	3.8	8.5	54.1	1.6	5.5
Fort Collins	CO	38,778	5.0	92.7	0.6	4.9	84.4	2.5	4.3
Grand Junction	CO	46,248	5.9	94.0	0.2	4.5	70.5	1.9	6.1
Greeley	CO	45,073	5.6	90.6	0.2	7.9	76.3	2.9	6.4
Pueblo	CO	26,435	7.6	73.4	1.2	24.4	67.8	2.1	8.3
Bridgeport	CT	89,665	6.9	81.5	8.7	6.3	75.6	2.8	8.5
Hartford	CT	213,411	7.0	88.8	5.1	3.7	76.4	4.0	9.2
New Haven	CT	209,161	7.0	89.1	4.9	3.6	76.1	3.8	8.4
Wilmington	DE	100,980	5.7	80.3	14.8	2.0	93.3	2.8	5.4
Washington	DC	304,910	5.2	64.6	27.8	2.4	90.4	2.4	8.0
Bradenton	FL	63,195	10.9	92.0	3.6	2.8	70.2	1.8	4.2
Clearwater	FL	101,093	11.9	93.0	2.2	2.9	56.8	2.1	5.7
Fort Lauderdale	FL	465,990	10.0	80.8	9.2	7.7	61.6	1.5	6.3
Fort Myers	FL	246,056	11.1	90.4	3.2	4.9	75.5	1.3	4.0
Gainesville	FL	79,105	6.1	86.5	9.6	2.3	84.8	2.7	8.0
Hudson	FL	94,460	12.2	92.5	1.7	4.3	52.1	1.4	4.7
Jacksonville	FL	204,358	5.2	81.2	13.7	2.6	78.6	2.7	7.1
Lakeland	FL	56,529	7.0	85.1	8.0	5.2	58.0	1.9	7.5
Miami	FL	424,426	6.5	29.8	11.6	56.3	42.2	1.4	25.1
Ocala	FL	154,670	13.1	91.7	3.7	3.1	70.3	1.3	3.4
Orlando	FL	551,033	7.3	79.8	7.8	9.7	67.3	2.0	6.6
Ormond Beach	FL	88,051	11.3	89.6	5.9	2.8	60.8	1.7	4.5
Panama City	FL	32,068	6.4	90.8	6.4	1.2	87.9	3.4	7.7
Pensacola	FL	113,796	6.3	87.6	8.8	1.4	82.8	2.5	5.8
Sarasota	FL	106,722	16.2	94.8	2.0	1.9	81.1	1.7	3.1
St. Petersburg	FL	70,664	9.4	85.1	8.8	3.2	58.6	2.5	8.4
Tallahassee	FL	97,926	5.1	77.1	20.8	1.0	69.8	3.1	9.5
Tampa	FL	168,926	5.6	74.3	8.5	14.3	56.4	1.7	9.3
Albany	GA	25,745	5.3	63.8	34.8	0.4	76.3	3.0	10.8
Atlanta	GA	620,180	3.9	77.1	18.3	1.9	72.0	1.9	5.8
Augusta	GA	86,484	5.5	70.9	26.5	0.9	75.1	2.6	9.1
Columbus	GA	39,408	5.3	66.5	30.8	1.3	76.8	2.8	7.6
Macon	GA	91,201	5.5	72.4	25.9	0.6	73.5	3.0	9.5
Rome	GA	39,891	5.7	92.0	6.3	0.9	77.9	2.8	7.3
Savannah	GA	108,979	5.3	78.2	19.6	0.9	78.2	2.4	7.0
Honolulu	HI	192,355	7.0	26.1	0.6	6.2	52.1	0.9	11.1
Boise	ID	110,806	5.2	94.0	0.2	3.6	62.7	1.2	5.9

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Idaho Falls	ID	24,372	4.5	95.0	0.1	2.7	76.4	1.1	5.0
Aurora	IL	28,085	3.4	82.6	4.8	10.2	84.2	2.8	9.1
Blue Island	IL	114,772	6.5	71.6	21.8	4.8	88.2	2.7	8.2
Chicago	IL	239,880	4.7	41.4	38.7	14.5	83.8	2.9	19.5
Elgin	IL	82,780	4.1	88.7	1.3	5.2	93.5	2.7	6.5
Evanston	IL	141,113	8.1	88.0	2.0	2.9	94.2	3.0	6.6
Hinsdale	IL	54,870	4.8	84.8	3.3	3.5	92.7	2.8	5.8
Joliet	IL	77,799	4.8	88.6	5.4	4.5	94.1	3.0	7.0
Melrose Park	IL	155,004	5.5	81.4	6.3	8.3	89.9	2.6	8.0
Peoria	IL	96,992	7.9	95.4	2.6	1.0	82.7	4.0	7.5
Rockford	IL	103,894	6.7	93.3	2.9	2.5	83.5	3.7	7.6
Springfield	IL	131,219	8.0	96.3	2.6	0.3	94.3	4.7	9.0
Urbana	IL	60,839	6.6	94.4	3.6	0.6	80.8	4.1	8.4
Bloomington	IL	22,995	5.4	95.8	2.1	0.8	84.9	4.5	7.4
Evansville	IN	103,151	7.3	96.9	2.1	0.3	83.8	4.9	8.7
Fort Wayne	IN	118,857	6.3	94.8	2.8	1.3	59.3	3.7	6.8
Gary	IN	69,201	6.1	78.9	16.4	3.6	92.8	3.3	6.6
Indianapolis	IN	360,502	5.6	91.5	6.5	0.6	79.3	3.7	7.6
Lafayette	IN	26,930	5.3	97.0	0.7	0.9	84.1	4.6	6.9
Muncie	IN	25,519	7.1	95.7	3.0	0.4	85.9	4.3	7.8
Munster	IN	40,205	6.4	75.7	12.7	10.1	92.7	2.6	6.9
South Bend	IN	94,465	6.5	93.2	4.1	1.5	74.3	3.4	6.9
Terre Haute	IN	25,740	6.8	96.7	1.8	0.4	90.2	4.9	8.8
Cedar Rapids	IA	42,092	6.8	97.8	0.8	0.5	74.2	3.8	5.4
Davenport	IA	77,362	7.5	94.4	2.5	2.0	83.5	3.7	6.3
Des Moines	IA	151,970	6.9	96.4	1.3	0.8	86.6	5.2	7.4
Dubuque	IA	25,732	7.9	98.6	0.1	0.4	57.2	2.9	6.6
Iowa City	IA	46,375	6.6	96.7	0.6	1.2	87.2	4.8	7.2
Mason City	IA	25,120	10.6	98.4	0.1	0.7	96.5	6.2	6.0
Sioux City	IA	38,076	7.7	95.8	0.4	1.4	82.8	4.9	6.7
Waterloo	IA	33,098	7.8	95.7	2.8	0.4	86.0	4.9	6.5
Topeka	KS	60,638	6.6	92.4	3.2	2.5	93.2	4.3	5.7
Wichita	KS	177,566	7.2	92.9	2.6	2.7	89.8	4.5	6.3
Covington	KY	46,968	4.8	97.3	1.2	0.5	69.8	2.9	4.8
Lexington	KY	196,790	5.5	95.7	3.2	0.3	79.8	3.3	10.6
Louisville	KY	232,749	5.9	91.4	7.0	0.5	81.1	3.5	7.2
Owensboro	KY	21,825	6.8	97.1	2.0	0.3	84.3	3.7	7.0
Paducah	KY	62,744	7.7	96.1	3.0	0.3	88.4	3.7	6.9
Alexandria	LA	39,498	5.8	79.7	18.2	0.9	87.8	4.9	13.9
Baton Rouge	LA	103,335	4.6	72.0	24.8	1.8	60.2	2.9	10.0
Houma	LA	32,510	5.2	83.0	13.2	2.3	81.0	3.1	9.0
Lafayette	LA	73,855	5.3	76.3	20.4	1.9	91.1	4.8	13.2

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Lake Charles	LA	32,718	5.3	81.9	16.0	1.2	86.9	3.6	8.3
Metairie	LA	63,806	6.3	82.4	10.2	5.5	50.5	2.2	6.8
Monroe	LA	36,428	6.2	77.6	21.1	0.6	84.2	4.9	13.1
New Orleans	LA	71,499	4.9	53.0	39.5	4.6	46.3	2.2	11.4
Shreveport	LA	93,130	6.3	72.6	25.5	0.9	84.5	4.7	11.5
Slidell	LA	26,312	5.6	87.4	9.0	2.5	62.7	2.0	6.4
Bangor	ME	67,608	7.7	98.1	0.2	0.3	83.6	2.7	13.8
Portland	ME	167,109	7.1	98.1	0.3	0.4	80.9	2.6	9.6
Baltimore	MD	320,909	6.1	74.0	21.8	1.0	89.5	2.2	6.3
Salisbury	MD	81,668	7.9	87.5	10.4	0.8	95.4	2.4	4.7
Takoma Park	MD	95,181	4.7	55.3	29.3	5.5	88.3	1.9	7.5
Boston	MA	670,334	6.8	88.1	3.9	3.5	79.7	3.1	13.6
Springfield	MA	106,481	7.2	89.6	3.6	4.9	76.0	3.5	14.4
Worcester	MA	103,653	6.4	93.2	1.2	2.9	56.6	2.6	13.5
Ann Arbor	MI	180,161	5.7	88.7	6.9	1.3	71.0	1.9	6.4
Dearborn	MI	70,726	7.0	90.2	4.0	2.8	68.8	2.1	9.1
Detroit	MI	220,317	6.4	65.8	30.9	1.4	74.0	2.3	12.4
Flint	MI	78,980	6.1	86.3	11.2	1.2	68.6	1.8	6.8
Grand Rapids	MI	148,532	5.6	93.4	2.9	2.0	54.3	2.0	8.1
Kalamazoo	MI	92,915	6.3	93.0	4.5	1.0	73.6	2.5	8.0
Lansing	MI	89,246	5.6	92.8	3.3	1.9	74.1	2.3	7.4
Marquette	MI	35,682	8.4	97.2	0.1	0.3	75.8	3.9	10.0
Muskegon	MI	40,802	6.9	92.6	5.1	1.2	60.2	2.3	8.9
Petoskey	MI	33,649	8.2	95.5	0.1	0.3	76.7	2.3	7.1
Pontiac	MI	59,288	5.1	88.3	6.8	1.8	71.1	1.7	6.0
Royal Oak	MI	102,256	7.1	81.0	12.6	1.0	72.3	1.9	9.3
Saginaw	MI	112,989	8.2	93.6	3.5	1.7	79.3	2.7	8.2
St. Joseph	MI	22,602	7.4	86.7	10.3	1.3	75.6	2.4	10.2
Traverse City	MI	46,263	8.5	98.1	0.1	0.5	73.8	2.3	6.6
Duluth	MN	56,964	8.0	96.6	0.2	0.3	57.8	2.0	9.6
Minneapolis	MN	413,977	5.8	95.1	1.6	0.6	44.9	1.3	8.7
Rochester	MN	65,038	7.8	97.4	0.3	0.6	62.4	2.6	8.1
St. Cloud	MN	33,402	6.4	97.9	0.4	0.4	43.9	1.1	9.0
St. Paul	MN	125,058	5.3	92.9	2.0	1.4	44.3	1.5	8.5
Gulfport	MS	23,883	4.9	82.5	13.4	1.6	89.0	2.4	7.7
Hattiesburg	MS	40,003	5.6	81.5	17.5	0.4	85.3	3.3	11.5
Jackson	MS	133,461	5.7	66.0	32.8	0.3	85.2	3.9	13.7
Meridian	MS	27,712	6.8	69.8	28.5	0.3	92.0	4.6	14.2
Oxford	MS	19,467	5.9	75.6	23.6	0.3	90.2	4.0	14.3
Tupelo	MS	54,068	6.0	82.0	17.2	0.2	91.2	3.8	11.9
Cape Girardeau	MO	40,280	7.3	94.2	4.8	0.3	91.6	4.6	15.0
Columbia	MO	99,907	6.7	96.3	2.3	0.4	89.5	4.4	8.2

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Joplin	MO	55,989	7.1	94.5	0.5	0.6	85.5	3.6	9.9
Kansas City	MO	309,892	5.8	89.1	7.3	1.9	74.6	3.3	6.5
Springfield	MO	144,130	7.5	98.1	0.4	0.6	65.5	3.0	8.2
St. Louis	MO	464,722	6.5	87.7	10.2	0.7	73.8	3.2	8.3
Billings	MT	81,977	6.3	95.4	0.1	1.1	85.8	3.0	4.9
Great Falls	MT	22,694	7.3	90.4	0.3	0.7	79.4	3.0	6.4
Missoula	MT	61,675	6.6	96.3	0.1	0.9	83.6	2.5	5.5
Lincoln	NE	83,208	7.4	96.9	0.5	1.2	91.9	4.5	7.6
Omaha	NE	171,755	6.6	94.1	3.0	1.6	84.0	4.3	7.3
Las Vegas	NV	240,275	4.6	74.7	7.6	9.6	60.9	1.0	5.6
Reno	NV	105,081	5.4	88.8	1.0	5.5	78.8	1.2	4.7
Lebanon	NH	67,790	7.7	98.1	0.2	0.4	92.9	3.4	7.9
Manchester	NH	120,430	5.9	97.1	0.5	0.8	94.3	3.7	5.4
Camden	NJ	432,828	7.5	86.0	7.7	3.4	83.0	2.7	6.8
Hackensack	NJ	170,099	6.9	71.6	4.8	15.6	82.7	2.7	12.4
Morristown	NJ	136,045	6.1	86.2	5.1	3.6	88.7	2.6	6.3
New Brunswick	NJ	126,535	6.0	77.0	6.3	6.3	85.9	2.7	9.0
Newark	NJ	160,936	5.3	54.4	25.2	14.6	77.9	2.8	15.0
Paterson	NJ	50,932	6.2	75.6	8.6	12.7	82.0	3.8	12.6
Ridgewood	NJ	56,684	6.0	86.9	4.8	3.6	87.4	3.3	8.3
Albuquerque	NM	218,140	5.6	63.1	1.1	25.9	67.0	1.3	7.7
Albany	NY	273,646	7.2	93.1	3.0	1.7	69.2	3.3	9.2
Binghamton	NY	59,807	8.1	96.4	1.0	0.8	70.8	3.3	8.9
Bronx	NY	128,465	4.6	26.0	30.3	39.4	49.3	3.4	38.1
Buffalo	NY	213,117	8.0	90.5	6.2	1.3	41.0	1.8	8.7
Elmira	NY	52,485	8.4	95.3	2.0	1.0	68.4	4.2	12.1
East Long Island	NY	626,864	6.7	71.2	10.8	8.5	70.6	2.5	14.5
Manhattan	NY	576,944	5.8	53.1	20.1	16.3	63.4	2.1	30.9
Rochester	NY	186,816	6.8	90.8	5.2	1.7	37.7	2.2	8.8
Syracuse	NY	147,922	6.7	94.4	2.7	0.8	72.5	3.5	9.5
White Plains	NY	155,409	6.8	78.7	9.7	7.2	80.0	2.8	10.6
Asheville	NC	123,617	8.6	95.4	2.2	0.6	82.0	2.8	9.6
Charlotte	NC	289,318	4.9	82.4	14.3	1.4	81.8	2.3	9.8
Durham	NC	184,404	6.3	72.8	23.0	0.8	78.3	2.7	11.9
Greensboro	NC	83,903	6.1	80.9	16.6	0.8	58.3	2.0	10.0
Greenville	NC	111,801	5.8	74.2	24.0	0.7	94.7	2.7	13.3
Hickory	NC	45,682	6.2	93.8	4.4	0.7	78.5	2.4	9.5
Raleigh	NC	223,059	4.4	73.0	22.8	1.6	85.4	2.2	11.5
Wilmington	NC	69,315	6.3	83.3	14.7	0.6	91.1	2.5	9.8
Winston-Salem	NC	169,610	6.5	88.1	9.9	0.8	58.8	2.1	9.8
Bismarck	ND	34,229	8.5	96.5	0.1	0.2	85.2	5.6	7.6
Fargo/Moorhead MN	ND	79,005	7.6	95.9	0.1	0.3	64.4	3.3	9.2

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Grand Forks	ND	24,035	7.5	95.1	0.2	0.7	73.9	3.9	8.8
Minot	ND	18,174	8.0	95.0	0.2	0.3	88.4	4.9	6.3
Akron	OH	97,848	6.8	90.4	7.5	0.5	51.1	2.4	6.9
Canton	OH	98,650	7.6	95.2	3.2	0.5	49.8	3.1	7.4
Cincinnati	OH	211,156	5.9	88.5	9.4	0.4	60.1	2.9	7.2
Cleveland	OH	310,178	7.6	82.7	13.9	1.4	61.7	3.1	7.9
Columbus	OH	372,906	5.5	92.2	5.7	0.4	61.4	2.9	8.1
Dayton	OH	157,088	6.9	88.8	9.5	0.5	60.1	3.0	7.3
Elyria	OH	37,402	6.8	89.3	5.0	4.3	68.3	2.8	5.6
Kettering	OH	64,225	7.2	95.0	2.9	0.5	54.1	2.4	5.5
Toledo	OH	137,554	6.6	90.8	5.7	2.1	64.7	3.2	7.1
Youngstown	OH	111,160	9.1	91.8	6.4	1.0	50.8	2.9	7.4
Lawton	OK	25,356	5.8	83.3	6.1	2.9	94.1	3.2	9.8
Oklahoma City	OK	242,576	5.9	87.7	4.8	1.9	84.5	3.2	9.5
Tulsa	OK	186,545	6.1	84.9	4.4	1.1	76.7	2.9	9.2
Bend	OR	38,057	6.6	96.6	0.2	1.5	71.5	0.3	4.2
Eugene	OR	121,539	7.4	96.0	0.3	1.4	58.7	0.5	5.9
Medford	OR	83,237	8.6	95.0	0.3	2.3	70.9	0.6	6.6
Portland	OR	341,154	5.5	91.5	1.4	2.2	48.9	0.7	7.5
Salem	OR	43,118	6.2	93.3	0.4	3.4	40.1	0.5	7.2
Allentown	PA	184,619	7.4	92.8	2.0	3.4	74.8	3.3	7.8
Altoona	PA	51,446	8.4	98.5	0.5	0.3	50.1	2.9	10.1
Danville	PA	87,427	7.6	98.2	0.5	0.4	60.2	3.3	8.9
Erie	PA	117,693	8.0	97.1	1.4	0.6	62.0	3.4	9.9
Harrisburg	PA	160,399	7.3	93.9	3.3	1.1	62.9	3.1	6.8
Johnstown	PA	41,932	9.9	98.0	0.9	0.5	34.7	1.9	9.2
Lancaster	PA	98,677	7.1	93.2	2.7	2.2	69.0	3.2	6.8
Philadelphia	PA	553,179	6.7	76.2	17.2	2.6	66.1	3.0	12.3
Pittsburgh	PA	495,471	8.9	93.9	4.5	0.5	39.4	1.8	7.9
Reading	PA	88,279	7.5	93.9	2.0	2.9	65.7	3.3	8.5
Sayre	PA	32,500	7.7	98.2	0.4	0.4	74.1	2.9	9.1
Scranton	PA	56,953	8.9	97.2	0.6	1.0	75.8	3.8	9.8
Wilkes-Barre	PA	43,092	9.1	97.3	0.8	0.9	76.0	3.8	10.0
York	PA	65,042	6.8	95.3	2.3	1.2	69.1	2.8	6.1
Providence	RI	170,488	7.1	91.7	2.1	3.8	62.5	2.9	10.8
Charleston	SC	151,965	5.5	79.5	18.1	1.0	85.7	1.7	7.6
Columbia	SC	159,618	5.4	70.9	27.3	0.7	81.5	2.5	11.6
Florence	SC	49,544	5.6	65.3	33.8	0.3	89.3	3.2	18.6
Greenville	SC	129,332	6.0	87.6	10.3	0.9	75.1	2.4	8.7
Spartanburg	SC	54,960	6.2	85.1	13.3	0.6	71.7	2.6	10.7
Rapid City	SD	32,377	6.7	92.0	0.2	0.8	83.1	3.2	5.7
Sioux Falls	SD	121,345	8.2	97.2	0.1	0.4	83.5	4.9	7.0

*All beneficiaries age 65-99, including those enrolled in Medicare Advantage HMOs. Rates are unadjusted.

Appendix Table 1. Demographic characteristics of older adults in Medicare (2012)

HRR name	State	Total* Medicare beneficiaries age 65-99	Percent of U.S. population age 75 and older (2010)	Percent of Medicare beneficiaries whose race was non-Hispanic white	Percent of Medicare beneficiaries whose race was black	Percent of Medicare beneficiaries whose race was Hispanic	Percent of Medicare beneficiaries receiving fee-for-service care	Percent of Medicare beneficiaries living in nursing homes	Percent of Medicare beneficiaries eligible for Medicaid
Chattanooga	TN	102,145	6.4	91.1	7.3	0.6	73.3	2.4	7.2
Jackson	TN	51,569	7.1	87.5	11.5	0.4	90.3	4.8	10.4
Johnson City	TN	42,487	6.6	97.6	1.3	0.3	66.5	3.3	9.6
Kingsport	TN	82,675	7.5	98.2	1.0	0.2	58.6	2.0	9.1
Knoxville	TN	216,236	6.5	96.1	2.5	0.4	62.7	2.6	8.5
Memphis	TN	208,791	5.0	68.7	29.5	0.6	84.8	3.2	11.9
Nashville	TN	347,532	5.2	90.8	7.2	0.8	73.7	2.8	7.6
Abilene	TX	46,023	7.5	88.8	2.3	8.0	86.9	4.6	9.8
Amarillo	TX	55,362	6.0	86.4	2.1	10.0	88.4	3.5	7.0
Austin	TX	157,399	3.6	79.4	5.4	12.0	80.0	2.8	6.4
Beaumont	TX	62,397	6.4	78.4	16.8	3.4	74.7	3.2	8.1
Bryan	TX	26,473	4.4	80.5	10.2	7.9	85.5	3.4	7.5
Corpus Christi	TX	69,653	5.8	51.9	2.3	44.5	60.5	3.0	12.7
Dallas	TX	461,072	3.9	77.4	10.7	7.7	80.0	2.9	8.0
El Paso	TX	125,831	5.2	38.4	1.8	58.3	65.4	1.5	16.1
Fort Worth	TX	225,260	4.2	81.6	7.3	7.8	67.7	2.8	6.9
Harlingen	TX	58,522	5.0	26.3	0.2	72.6	73.4	2.3	30.9
Houston	TX	602,745	3.8	67.6	13.6	13.1	71.8	2.4	8.9
Longview	TX	28,158	6.6	84.6	12.7	1.7	82.5	3.8	8.1
Lubbock	TX	82,378	5.7	75.0	3.5	20.3	86.1	3.4	9.2
McAllen	TX	57,313	4.0	21.7	0.2	77.3	80.4	2.3	33.0
Odessa	TX	38,326	5.3	66.0	3.9	29.0	87.0	3.0	12.2
San Angelo	TX	23,551	7.1	78.0	2.0	19.1	89.1	4.5	9.2
San Antonio	TX	313,695	5.1	54.9	4.0	39.4	70.4	2.6	11.4
Temple	TX	48,820	4.0	79.4	8.5	9.3	68.4	2.8	7.6
Tyler	TX	87,808	6.9	87.4	9.4	2.5	83.9	3.9	8.2
Victoria	TX	22,311	7.3	72.9	5.1	21.1	89.1	4.9	9.3
Waco	TX	46,189	6.7	83.0	9.6	6.4	77.2	4.6	9.0
Wichita Falls	TX	29,326	7.0	89.0	4.2	5.1	90.6	4.1	7.8
Ogden	UT	43,741	4.0	92.0	0.9	4.8	67.3	1.4	4.2
Provo	UT	43,378	3.1	95.8	0.1	2.6	59.6	1.0	4.0
Salt Lake City	UT	201,784	4.4	92.9	0.3	3.9	66.0	1.4	4.8
Burlington	VT	90,988	6.2	96.8	0.3	0.5	87.9	3.0	10.7
Arlington	VA	202,625	3.5	76.1	7.4	4.7	88.4	1.5	6.4
Charlottesville	VA	84,166	6.6	90.8	7.0	0.6	88.1	2.7	6.1
Lynchburg	VA	41,316	7.3	83.2	15.3	0.5	83.2	2.8	7.6
Newport News	VA	77,950	5.9	73.7	23.0	1.0	85.8	2.1	5.1
Norfolk	VA	148,393	5.1	70.6	24.4	1.8	85.9	2.4	7.6
Richmond	VA	218,113	5.4	73.9	23.1	0.9	83.1	2.3	6.8
Roanoke	VA	115,073	7.2	93.0	5.6	0.3	81.9	2.8	6.9
Winchester	VA	61,209	5.8	94.9	3.2	0.7	85.8	2.4	6.0
Everett	WA	86,831	5.3	92.7	0.6	1.9	58.5	1.1	7.5

*All beneficiaries age 65-99, including those enrolled in Medicare Advantage HMOs. Rates are unadjusted.

Appendix Table 1. Demographic characteristics of older adults in Medicare (2012)

HRR name	State	Total* Medicare beneficiaries age 65-99	Percent of U.S. population age 75 and older (2010)	Percent of Medicare beneficiaries whose race was non-Hispanic white	Percent of Medicare beneficiaries whose race was black	Percent of Medicare beneficiaries whose race was Hispanic	Percent of Medicare beneficiaries receiving fee-for-service care	Percent of Medicare beneficiaries living in nursing homes	Percent of Medicare beneficiaries eligible for Medicaid
Olympia	WA	59,368	6.4	93.4	0.7	1.7	69.4	1.3	6.7
Seattle	WA	350,296	5.5	84.5	2.7	2.2	70.1	1.4	9.4
Spokane	WA	214,528	6.2	94.0	0.4	2.7	77.2	1.6	7.6
Tacoma	WA	92,158	4.9	86.0	4.0	2.2	71.5	1.3	8.6
Yakima	WA	35,638	5.3	83.3	0.6	12.3	80.8	2.1	11.7
Charleston	WV	135,262	7.4	96.6	2.3	0.3	71.5	2.4	8.7
Huntington	WV	55,521	7.2	97.8	1.2	0.2	73.8	2.6	9.0
Morgantown	WV	59,227	6.9	97.7	1.0	0.4	74.7	3.0	8.8
Appleton	WI	47,101	6.9	96.5	0.1	0.5	44.4	3.0	8.0
Green Bay	WI	78,377	7.1	97.0	0.2	0.6	60.3	3.0	7.2
La Crosse	WI	53,482	7.5	98.2	0.2	0.3	59.8	3.3	9.3
Madison	WI	143,755	6.0	96.4	1.2	0.8	74.8	2.7	7.1
Marshfield	WI	64,500	8.0	97.9	0.1	0.3	56.9	2.5	8.7
Milwaukee	WI	330,962	5.9	88.0	6.7	3.1	71.1	2.4	9.0
Neenah	WI	34,912	7.2	97.8	0.2	0.7	48.4	1.9	7.0
Wausau	WI	33,540	8.0	97.6	0.1	0.3	62.9	3.0	8.4
Casper	WY	27,983	6.6	93.9	0.2	2.6	94.6	3.6	6.1
United States	US	39,835,289	6.0	80.8	8.3	6.5	70.7	2.5	10.2

*All beneficiaries age 65-99, including those enrolled in Medicare Advantage HMOs. Rates are unadjusted.

Appendix Table 2. Interactions with the health care system among older adults (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*	Average number of contact days with the health care system per beneficiary	Percent of beneficiaries whose predominant provider was a primary care physician	Average number of unique clinicians seen per beneficiary	Percent of beneficiaries having an annual wellness visit	Average number of inpatient days per beneficiary
Birmingham	AL	224,163	16.2	60.7	3.3	4.5	4.7
Dothan	AL	47,867	16.6	62.2	3.4	3.6	4.6
Huntsville	AL	69,825	16.6	63.6	3.4	7.9	4.6
Mobile	AL	73,898	16.3	51.4	3.7	2.9	4.1
Montgomery	AL	42,027	16.5	62.3	3.4	4.0	4.0
Tuscaloosa	AL	28,426	16.5	64.3	3.5	19.3	4.7
Anchorage	AK	50,381	11.9	47.1	2.6	7.2	2.5
Mesa	AZ	74,734	19.7	53.7	3.9	16.7	3.2
Phoenix	AZ	238,759	17.8	51.5	3.5	13.0	3.3
Sun City	AZ	42,937	20.7	53.3	4.1	17.9	2.8
Tucson	AZ	94,458	16.9	52.0	3.4	17.1	2.7
Fort Smith	AR	40,068	14.2	59.6	2.7	3.4	5.2
Jonesboro	AR	28,069	14.6	70.8	2.8	5.7	5.3
Little Rock	AR	186,703	15.3	60.3	3.0	7.0	4.6
Springdale	AR	46,725	15.6	56.4	3.0	6.9	4.3
Texarkana	AR	31,052	15.0	56.3	3.0	4.7	5.5
Orange County	CA	171,091	21.1	50.6	3.6	14.0	4.2
Bakersfield	CA	64,573	17.8	59.9	3.0	8.4	4.1
Chico	CA	43,379	15.5	59.6	3.1	8.0	3.8
Contra Costa County	CA	57,591	15.9	47.8	3.2	11.5	3.6
Fresno	CA	76,509	16.9	57.2	3.1	13.1	3.8
Los Angeles	CA	470,602	21.0	51.4	3.5	9.2	5.6
Modesto	CA	64,257	16.4	60.6	3.1	6.8	3.7
Napa	CA	32,617	13.5	56.0	2.7	9.0	3.6
Alameda County	CA	72,076	16.3	49.5	3.0	16.1	4.2
Palm Springs/Rancho Mirage	CA	37,476	19.6	46.2	3.9	10.7	3.1
Redding	CA	49,705	15.1	59.2	2.7	10.3	3.4
Sacramento	CA	167,169	16.3	59.7	3.1	10.4	3.3
Salinas	CA	38,995	16.6	57.4	3.2	10.5	3.0
San Bernardino	CA	99,741	17.7	53.4	3.0	9.0	4.8
San Diego	CA	194,969	17.1	48.9	3.2	10.6	3.9
San Francisco	CA	89,845	15.4	51.7	3.0	12.0	3.7
San Jose	CA	97,935	16.6	53.4	3.2	12.9	3.4
San Luis Obispo	CA	32,304	17.6	59.2	3.1	14.5	2.4
San Mateo County	CA	49,955	15.5	46.4	3.3	16.6	2.6
Santa Barbara	CA	44,321	17.3	53.0	3.3	14.8	2.4
Santa Cruz	CA	26,439	16.8	53.1	3.4	16.1	2.8
Santa Rosa	CA	37,337	16.0	51.2	2.9	14.4	3.1
Stockton	CA	35,666	15.6	56.9	3.0	11.4	4.5
Ventura	CA	64,145	19.8	49.7	3.5	10.6	3.3
Boulder	CO	18,304	16.5	49.2	3.6	21.8	3.8
Colorado Springs	CO	67,087	14.0	53.7	3.0	13.6	3.5
Denver	CO	139,561	15.4	53.3	3.2	13.9	4.0

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Appendix Table 2. Interactions with the health care system among older adults (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*	Average number of contact days with the health care system per beneficiary	Percent of beneficiaries whose predominant provider was a primary care physician	Average number of unique clinicians seen per beneficiary	Percent of beneficiaries having an annual wellness visit	Average number of inpatient days per beneficiary
Fort Collins	CO	30,388	15.6	52.2	3.4	15.0	4.2
Grand Junction	CO	30,014	11.7	58.0	2.7	12.0	2.5
Greeley	CO	32,111	13.7	58.0	3.2	7.9	4.2
Pueblo	CO	16,561	14.8	65.7	3.0	11.8	4.4
Bridgeport	CT	59,676	19.8	48.6	3.9	16.8	4.8
Hartford	CT	148,551	18.3	54.8	3.7	21.1	5.8
New Haven	CT	142,268	19.8	51.6	3.9	20.2	5.6
Wilmington	DE	87,831	19.4	60.7	3.6	6.4	4.2
Washington	DC	236,130	17.5	51.4	3.6	10.7	4.0
Bradenton	FL	41,961	21.7	52.3	4.1	13.8	4.4
Clearwater	FL	53,047	20.6	54.0	4.0	26.1	5.0
Fort Lauderdale	FL	265,321	24.3	46.7	4.7	17.7	4.0
Fort Myers	FL	177,214	21.5	55.2	4.2	19.1	3.9
Gainesville	FL	62,480	17.6	59.3	3.3	12.0	5.0
Hudson	FL	46,901	21.5	57.5	3.7	10.8	5.1
Jacksonville	FL	150,706	20.6	57.9	4.0	9.8	5.1
Lakeland	FL	30,485	20.8	58.6	3.8	10.4	5.4
Miami	FL	158,263	22.2	46.9	4.0	7.6	5.2
Ocala	FL	105,039	20.8	58.0	4.0	10.1	3.9
Orlando	FL	346,451	21.2	55.2	4.0	10.2	4.8
Ormond Beach	FL	50,738	20.2	61.5	3.7	14.3	3.9
Panama City	FL	27,048	20.6	62.2	3.7	8.5	5.1
Pensacola	FL	89,885	17.2	59.0	3.5	8.6	4.5
Sarasota	FL	83,037	20.6	50.1	4.2	22.8	3.4
St. Petersburg	FL	37,736	20.6	53.1	3.7	11.1	5.8
Tallahassee	FL	63,480	17.1	60.3	3.3	9.9	4.5
Tampa	FL	86,542	20.5	54.4	3.8	9.9	5.2
Albany	GA	18,781	15.4	63.3	3.3	3.6	3.4
Atlanta	GA	408,912	16.7	54.7	3.6	13.5	3.9
Augusta	GA	61,416	15.0	54.9	3.1	15.5	4.3
Columbus	GA	28,762	18.1	63.9	3.5	7.7	3.4
Macon	GA	63,436	17.7	63.8	3.5	15.9	4.4
Rome	GA	29,828	16.8	68.0	3.5	4.4	4.9
Savannah	GA	81,083	18.1	55.7	3.7	12.8	4.0
Honolulu	HI	82,365	16.5	59.9	3.0	3.2	3.1
Boise	ID	64,092	12.2	49.7	2.9	12.6	3.2
Idaho Falls	ID	17,527	13.1	45.8	2.9	5.8	3.2
Aurora	IL	21,563	18.7	60.2	3.6	22.4	5.4
Blue Island	IL	93,483	18.2	57.3	3.2	6.8	5.5
Chicago	IL	176,284	17.6	58.3	3.1	9.1	5.4
Elgin	IL	70,502	18.2	60.4	3.4	10.7	5.4
Evanston	IL	119,978	18.5	57.1	3.6	18.6	4.7
Hinsdale	IL	45,815	18.4	56.9	3.6	11.5	4.7

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Joliet	IL	69,063	18.6	56.4	3.5	10.9	5.5
Melrose Park	IL	125,493	17.3	59.5	3.2	9.1	5.2
Peoria	IL	77,384	15.0	58.3	3.0	2.8	5.6
Rockford	IL	82,273	15.5	58.2	3.2	4.8	4.8
Springfield	IL	119,146	14.5	62.0	3.1	3.5	5.5
Urbana	IL	46,065	15.0	60.2	3.2	2.7	5.1
Bloomington	IL	18,634	16.6	60.0	3.5	8.6	4.9
Evansville	IN	82,515	14.1	67.0	2.9	7.5	6.4
Fort Wayne	IN	65,848	14.3	60.3	3.1	4.9	4.8
Gary	IN	60,731	16.8	53.8	3.1	5.4	5.6
Indianapolis	IN	268,831	15.2	57.2	3.3	8.8	5.4
Lafayette	IN	21,150	15.3	61.5	3.4	10.4	5.4
Muncie	IN	20,986	15.5	62.7	3.2	13.1	5.4
Munster	IN	35,104	18.2	51.8	3.3	8.0	5.7
South Bend	IN	65,622	15.5	60.0	2.9	15.1	5.1
Terre Haute	IN	22,264	16.1	55.4	3.0	1.6	6.2
Cedar Rapids	IA	29,434	14.8	57.5	3.1	10.7	4.3
Davenport	IA	61,483	16.3	61.2	3.3	8.8	4.3
Des Moines	IA	123,859	13.7	57.5	3.1	9.5	4.3
Dubuque	IA	13,863	14.9	59.7	3.3	13.6	4.7
Iowa City	IA	37,903	13.5	58.6	2.9	4.1	4.3
Mason City	IA	23,401	11.2	55.6	2.9	10.5	4.5
Sioux City	IA	29,730	12.0	55.9	2.7	2.4	3.8
Waterloo	IA	27,320	14.6	57.0	3.4	11.7	4.4
Topeka	KS	53,447	15.2	62.6	3.1	8.6	4.0
Wichita	KS	150,612	14.7	62.4	2.9	5.1	4.5
Covington	KY	30,285	16.3	56.5	3.4	4.5	5.4
Lexington	KY	148,732	15.5	60.3	3.1	5.5	5.5
Louisville	KY	178,238	17.1	58.2	3.4	6.6	5.9
Owensboro	KY	17,828	17.8	52.3	3.6	14.2	5.0
Paducah	KY	53,530	16.3	59.1	3.4	7.9	6.1
Alexandria	LA	32,951	15.7	54.9	2.9	2.0	7.2
Baton Rouge	LA	56,711	17.2	48.8	3.7	5.4	5.1
Houma	LA	24,882	16.8	47.0	3.3	4.5	4.8
Lafayette	LA	63,977	17.0	55.7	3.2	5.6	5.7
Lake Charles	LA	27,017	17.2	59.2	3.2	2.8	5.7
Metairie	LA	28,933	18.1	42.6	3.6	5.6	5.0
Monroe	LA	29,152	16.4	62.3	3.0	5.0	7.6
New Orleans	LA	28,821	16.6	45.8	3.3	4.7	4.6
Shreveport	LA	73,901	15.7	55.8	3.1	5.5	7.2
Slidell	LA	15,391	17.4	47.5	3.4	2.0	4.5
Bangor	ME	53,693	11.6	49.1	2.4	13.8	4.1
Portland	ME	126,180	14.1	56.9	3.0	15.1	3.8

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Appendix Table 2. Interactions with the health care system among older adults (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*	Average number of contact days with the health care system per beneficiary	Percent of beneficiaries whose predominant provider was a primary care physician	Average number of unique clinicians seen per beneficiary	Percent of beneficiaries having an annual wellness visit	Average number of inpatient days per beneficiary
Baltimore	MD	257,962	18.0	59.6	3.6	8.5	4.2
Salisbury	MD	74,058	18.3	57.7	3.9	10.5	3.8
Takoma Park	MD	69,696	18.0	51.2	3.6	11.8	3.7
Boston	MA	472,624	18.1	55.1	3.7	21.9	5.5
Springfield	MA	73,647	17.6	63.8	3.6	18.6	5.3
Worcester	MA	51,106	16.9	60.0	3.4	25.8	5.4
Ann Arbor	MI	119,483	17.3	62.8	3.4	14.0	4.9
Dearborn	MI	46,169	19.7	66.3	3.2	11.7	6.3
Detroit	MI	154,233	19.6	61.8	3.5	13.9	5.3
Flint	MI	52,357	19.0	67.5	3.3	22.8	4.7
Grand Rapids	MI	75,928	14.3	62.0	3.1	12.3	4.0
Kalamazoo	MI	65,224	14.6	60.2	3.2	7.8	4.2
Lansing	MI	62,755	15.8	62.9	3.3	13.0	4.6
Marquette	MI	26,307	10.3	64.6	2.5	17.7	3.5
Muskegon	MI	23,564	14.4	67.0	2.9	8.6	3.5
Petoskey	MI	24,930	12.9	64.9	3.0	18.6	3.4
Pontiac	MI	39,315	19.5	58.8	3.6	15.7	5.1
Royal Oak	MI	68,174	20.2	59.4	3.8	16.7	5.3
Saginaw	MI	87,174	14.8	62.1	2.9	13.1	4.9
St. Joseph	MI	16,285	15.5	61.8	3.2	23.0	3.8
Traverse City	MI	32,915	13.8	66.7	2.8	16.7	3.6
Duluth	MN	31,230	11.4	54.8	2.7	6.2	3.7
Minneapolis	MN	165,396	12.2	52.2	2.8	9.0	3.8
Rochester	MN	38,157	11.6	52.3	2.9	3.9	4.0
St. Cloud	MN	13,341	11.6	54.5	2.7	14.3	3.7
St. Paul	MN	48,792	12.8	56.7	2.9	9.2	4.0
Gulfport	MS	20,092	16.5	43.4	3.2	4.0	4.8
Hattiesburg	MS	32,733	16.3	52.7	3.6	1.7	4.5
Jackson	MS	107,857	15.0	52.9	3.1	11.1	5.3
Meridian	MS	24,638	15.4	50.1	3.1	1.2	4.8
Oxford	MS	16,869	15.0	57.4	3.0	5.7	5.0
Tupelo	MS	47,565	15.7	54.2	3.4	5.1	4.9
Cape Girardeau	MO	35,560	13.4	62.4	2.9	8.4	6.0
Columbia	MO	85,058	14.3	56.9	3.1	4.8	5.0
Joplin	MO	45,675	14.5	64.3	2.8	3.2	5.3
Kansas City	MO	213,192	15.3	60.3	3.2	14.0	5.0
Springfield	MO	89,813	13.3	60.7	2.9	9.8	4.9
St. Louis	MO	317,968	15.7	58.8	3.2	7.1	5.2
Billings	MT	66,111	11.1	49.2	2.7	7.6	3.0
Great Falls	MT	17,011	12.1	50.9	2.8	10.9	3.8
Missoula	MT	48,832	11.5	45.8	2.6	16.0	3.4
Lincoln	NE	71,773	13.8	66.8	2.9	5.1	4.8
Omaha	NE	134,993	13.7	58.7	3.0	7.0	4.8

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Appendix Table 2. Interactions with the health care system among older adults (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*	Average number of contact days with the health care system per beneficiary	Percent of beneficiaries whose predominant provider was a primary care physician	Average number of unique clinicians seen per beneficiary	Percent of beneficiaries having an annual wellness visit	Average number of inpatient days per beneficiary
Las Vegas	NV	126,583	19.0	50.9	3.3	8.3	4.5
Reno	NV	75,080	13.7	47.3	3.0	9.1	3.2
Lebanon	NH	58,556	10.2	53.1	2.7	10.4	3.3
Manchester	NH	104,331	15.0	53.9	3.4	15.2	5.0
Camden	NJ	330,412	21.8	55.9	3.8	9.7	4.8
Hackensack	NJ	125,622	22.1	47.6	3.7	14.8	5.2
Morristown	NJ	108,752	20.0	48.9	3.6	13.4	4.5
New Brunswick	NJ	97,100	21.7	49.8	3.8	14.9	4.6
Newark	NJ	109,794	20.2	49.9	3.3	11.4	5.2
Paterson	NJ	37,402	21.6	54.8	3.6	12.6	5.3
Ridgewood	NJ	44,613	22.1	47.8	4.0	15.4	4.9
Albuquerque	NM	130,191	13.3	52.0	3.0	9.3	3.0
Albany	NY	173,948	17.7	55.7	3.6	15.0	4.7
Binghamton	NY	39,826	15.1	54.7	3.3	5.0	4.0
Bronx	NY	52,954	21.3	50.4	3.6	9.4	5.9
Buffalo	NY	75,544	16.0	57.9	3.2	14.0	4.9
Elmira	NY	33,613	17.7	57.9	3.5	6.2	5.3
East Long Island	NY	390,633	24.9	52.5	4.0	13.6	5.2
Manhattan	NY	313,724	24.6	49.0	3.8	9.4	4.8
Rochester	NY	61,072	15.4	58.8	3.2	10.4	4.2
Syracuse	NY	100,017	17.8	59.1	3.6	11.8	4.5
White Plains	NY	110,719	21.4	47.9	3.8	14.1	4.8
Asheville	NC	97,390	14.3	61.7	3.2	13.3	3.8
Charlotte	NC	224,322	16.5	60.3	3.7	11.3	4.0
Durham	NC	136,737	16.1	59.6	3.7	13.4	4.4
Greensboro	NC	45,586	16.5	59.2	3.7	17.1	4.4
Greenville	NC	102,272	16.8	63.7	3.6	13.1	4.2
Hickory	NC	34,429	16.3	67.0	3.4	13.4	3.9
Raleigh	NC	180,061	17.3	61.7	3.7	14.6	4.6
Wilmington	NC	60,821	18.7	66.1	4.0	8.5	4.3
Winston-Salem	NC	94,343	16.1	59.8	3.6	13.5	4.7
Bismarck	ND	27,627	12.4	52.1	3.1	13.7	6.0
Fargo/Moorhead MN	ND	47,245	12.5	59.4	2.8	4.8	4.8
Grand Forks	ND	16,471	11.1	55.8	2.8	5.6	5.6
Minot	ND	15,227	10.7	48.4	2.6	1.5	3.9
Akron	OH	45,410	16.8	63.0	3.3	8.2	5.7
Canton	OH	45,202	16.9	65.4	3.2	7.7	5.2
Cincinnati	OH	115,960	16.6	61.0	3.3	8.3	4.9
Cleveland	OH	174,375	16.8	57.4	3.5	8.7	5.7
Columbus	OH	212,182	15.5	63.8	3.2	9.1	5.3
Dayton	OH	87,569	16.2	61.1	3.1	6.0	5.4
Elyria	OH	23,916	17.1	58.8	3.7	3.9	6.1
Kettering	OH	31,644	17.8	60.4	3.5	8.4	4.8

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Appendix Table 2. Interactions with the health care system among older adults (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*	Average number of contact days with the health care system per beneficiary	Percent of beneficiaries whose predominant provider was a primary care physician	Average number of unique clinicians seen per beneficiary	Percent of beneficiaries having an annual wellness visit	Average number of inpatient days per beneficiary
Toledo	OH	84,008	16.2	62.6	3.2	5.3	5.8
Youngstown	OH	52,826	18.6	68.7	3.3	7.2	5.6
Lawton	OK	22,888	14.8	60.8	2.7	5.0	4.3
Oklahoma City	OK	191,490	15.3	57.7	3.0	4.9	4.3
Tulsa	OK	132,423	15.5	63.9	2.9	4.1	4.4
Bend	OR	25,725	13.9	50.4	3.5	4.9	1.4
Eugene	OR	65,526	13.1	57.9	2.8	9.4	2.6
Medford	OR	55,775	13.6	54.6	2.8	13.9	2.6
Portland	OR	144,703	12.3	52.5	2.7	7.5	2.9
Salem	OR	15,042	14.1	56.5	2.8	8.7	2.4
Allentown	PA	128,559	19.1	63.4	3.5	6.1	5.8
Altoona	PA	24,002	16.5	64.3	3.1	4.5	5.8
Danville	PA	48,650	16.1	68.3	3.1	12.0	5.1
Erie	PA	68,522	16.0	65.6	2.9	11.2	6.0
Harrisburg	PA	92,489	17.7	66.1	3.3	7.7	5.1
Johnstown	PA	13,339	15.2	67.4	2.8	4.1	6.6
Lancaster	PA	62,602	17.6	66.0	3.4	7.2	5.2
Philadelphia	PA	319,107	20.3	56.5	3.8	8.9	4.9
Pittsburgh	PA	171,685	16.0	59.5	3.0	8.5	5.6
Reading	PA	53,605	18.3	64.9	3.3	4.4	5.4
Sayre	PA	22,986	15.4	57.9	3.1	2.7	5.5
Scranton	PA	40,309	17.6	67.5	3.0	3.9	5.9
Wilkes-Barre	PA	30,356	17.3	66.7	3.0	2.5	6.2
York	PA	41,752	17.1	73.4	3.3	5.3	4.4
Providence	RI	92,327	19.2	58.9	3.6	25.4	4.9
Charleston	SC	123,522	17.5	60.7	3.7	11.7	3.5
Columbia	SC	123,237	16.3	61.7	3.4	6.9	4.2
Florence	SC	42,581	15.5	69.7	3.0	12.4	4.3
Greenville	SC	92,297	17.5	62.7	3.7	10.8	4.7
Spartanburg	SC	37,531	16.5	64.1	3.4	13.7	5.0
Rapid City	SD	24,900	12.8	52.1	2.7	10.6	4.0
Sioux Falls	SD	96,057	11.8	54.3	2.7	5.8	4.2
Chattanooga	TN	70,528	16.8	56.9	3.5	8.4	4.8
Jackson	TN	44,785	16.2	56.0	3.3	5.8	5.9
Johnson City	TN	26,363	16.2	57.3	3.4	5.3	5.6
Kingsport	TN	45,977	15.6	62.0	3.1	4.9	4.9
Knoxville	TN	127,741	16.8	61.7	3.3	13.7	5.0
Memphis	TN	164,134	16.0	51.6	3.2	9.0	5.0
Nashville	TN	239,611	16.6	59.1	3.3	9.9	5.8
Abilene	TX	38,386	14.6	58.6	2.8	7.5	5.1
Amarillo	TX	45,811	15.3	47.1	3.2	6.6	4.0
Austin	TX	115,151	17.8	51.7	3.6	18.0	4.4
Beaumont	TX	44,270	17.3	58.7	3.1	7.8	4.5

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Appendix Table 2. Interactions with the health care system among older adults (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*	Average number of contact days with the health care system per beneficiary	Percent of beneficiaries whose predominant provider was a primary care physician	Average number of unique clinicians seen per beneficiary	Percent of beneficiaries having an annual wellness visit	Average number of inpatient days per beneficiary
Bryan	TX	20,891	15.4	60.1	3.1	10.2	4.4
Corpus Christi	TX	39,010	19.1	64.3	3.0	9.9	5.7
Dallas	TX	334,320	17.7	57.3	3.4	12.6	5.3
El Paso	TX	75,398	15.5	54.0	3.0	5.2	3.6
Fort Worth	TX	137,190	18.7	59.8	3.3	13.2	5.6
Harlingen	TX	40,206	19.7	65.8	3.4	19.0	4.5
Houston	TX	386,406	17.1	51.6	3.2	9.2	5.0
Longview	TX	22,056	15.9	59.8	3.1	11.2	4.9
Lubbock	TX	67,129	14.2	48.7	3.0	7.1	4.7
McAllen	TX	43,147	20.8	70.9	3.7	21.8	5.1
Odessa	TX	31,125	14.4	53.6	2.8	4.8	4.4
San Angelo	TX	20,122	15.5	54.5	3.4	2.8	3.8
San Antonio	TX	202,985	17.7	54.0	3.3	12.0	4.5
Temple	TX	30,748	14.2	60.4	3.2	6.7	4.6
Tyler	TX	70,350	15.7	63.6	3.2	8.2	5.1
Victoria	TX	19,091	17.1	68.0	2.9	7.3	5.6
Waco	TX	33,004	13.2	60.0	2.8	4.7	4.7
Wichita Falls	TX	25,480	15.4	56.6	3.0	12.8	5.0
Ogden	UT	26,172	14.3	60.9	3.0	11.7	3.1
Provo	UT	23,093	14.1	60.9	2.9	6.6	3.4
Salt Lake City	UT	119,640	12.7	56.2	2.8	10.0	3.2
Burlington	VT	75,295	13.4	61.1	3.1	12.7	4.0
Arlington	VA	149,768	16.8	55.1	3.5	11.4	3.4
Charlottesville	VA	69,411	14.6	65.2	3.3	13.7	4.0
Lynchburg	VA	32,618	15.1	63.5	3.4	7.2	4.3
Newport News	VA	62,150	18.3	60.3	3.9	12.3	3.5
Norfolk	VA	118,209	17.8	62.8	3.8	7.4	4.3
Richmond	VA	167,209	16.1	62.5	3.5	8.3	4.2
Roanoke	VA	89,269	15.3	61.6	3.3	8.3	4.9
Winchester	VA	48,703	14.7	63.9	3.1	4.9	4.3
Everett	WA	45,593	14.0	56.1	3.1	10.6	3.5
Olympia	WA	37,933	13.2	53.7	2.7	8.8	3.6
Seattle	WA	217,196	14.3	54.3	3.2	11.9	3.4
Spokane	WA	154,489	13.8	56.1	3.0	11.3	3.2
Tacoma	WA	60,100	14.5	53.8	3.0	11.9	4.0
Yakima	WA	26,660	13.7	59.9	3.0	10.5	3.9
Charleston	WV	92,155	15.5	63.5	3.0	3.7	5.1
Huntington	WV	39,143	16.4	61.9	3.3	2.5	5.1
Morgantown	WV	41,626	14.8	59.3	3.0	4.3	4.5
Appleton	WI	19,706	13.2	52.6	2.8	15.9	4.0
Green Bay	WI	44,876	12.4	53.7	2.9	16.4	4.3
La Crosse	WI	30,106	13.1	58.6	2.9	13.7	4.0
Madison	WI	99,089	12.5	57.8	2.9	10.2	4.0

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Appendix Table 2. Interactions with the health care system among older adults (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*	Average number of contact days with the health care system per beneficiary	Percent of beneficiaries whose predominant provider was a primary care physician	Average number of unique clinicians seen per beneficiary	Percent of beneficiaries having an annual wellness visit	Average number of inpatient days per beneficiary
Marshfield	WI	34,946	12.7	57.7	2.9	11.1	4.3
Milwaukee	WI	219,087	15.9	60.3	3.1	10.2	4.7
Neenah	WI	15,894	13.8	49.4	2.8	20.2	3.8
Wausau	WI	20,181	13.3	58.9	3.0	14.9	4.2
Casper	WY	25,076	12.9	47.6	2.6	6.9	3.9
United States	US	25,823,281	17.1	56.9	3.4	10.7	4.6

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Appendix Table 3. Areas needing improvement (2012)

HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Birmingham	AL	23.5	23.5	13.9	6.4	3.4
Dothan	AL	22.9	29.0	13.2	5.9	2.3
Huntsville	AL	28.0	27.4	14.5	6.6	4.7
Mobile	AL	21.8	23.3	16.5	6.3	3.3
Montgomery	AL	26.1	28.2	14.7	7.0	2.1
Tuscaloosa	AL	22.7	25.3	15.5	4.1	3.1
Anchorage	AK	13.7	18.6	8.1		2.0
Mesa	AZ	20.6	27.0	22.8	5.7	4.3
Phoenix	AZ	19.9	23.3	20.1	5.2	3.5
Sun City	AZ	23.9	37.2	25.2	3.8	5.0
Tucson	AZ	18.8	31.0	20.7	3.2	3.6
Fort Smith	AR	17.6	20.7	22.9	6.5	2.0
Jonesboro	AR	16.7	19.2	16.5	6.3	2.0
Little Rock	AR	19.6	20.3	16.8	6.8	2.5
Springdale	AR	17.0	23.5	19.3	3.1	1.6
Texarkana	AR	20.2	20.0	17.5	5.4	3.4
Orange County	CA	25.4	22.9	17.3	10.8	5.5
Bakersfield	CA	21.5	21.6	14.6	6.5	4.0
Chico	CA	17.1	28.5	12.1	3.8	3.1
Contra Costa County	CA	18.4	25.6	15.5	3.8	4.0
Fresno	CA	18.7	24.7	14.1	6.7	4.0
Los Angeles	CA	27.5	19.6	12.9	12.8	7.1
Modesto	CA	18.9	22.8	14.2	4.0	4.9
Napa	CA	12.6	23.5	10.8	4.1	3.9
Alameda County	CA	15.9	21.4	12.9	5.4	4.2
Palm Springs/Rancho Mirage	CA	24.7	34.2	19.7		4.5
Redding	CA	13.0	24.0	14.1	3.7	2.9
Sacramento	CA	16.1	25.3	14.1	4.0	3.5
Salinas	CA	18.6	26.1	12.6	2.3	3.5
San Bernardino	CA	19.5	18.4	15.1	10.1	5.0
San Diego	CA	18.0	20.0	16.8	7.8	4.4
San Francisco	CA	15.5	20.0	11.2	2.9	3.8
San Jose	CA	17.7	19.8	14.0	5.4	4.1
San Luis Obispo	CA	15.6	26.0	14.0		2.7
San Mateo County	CA	16.2	26.0	13.7	2.2	3.6
Santa Barbara	CA	18.5	28.1	13.7	2.7	3.2
Santa Cruz	CA	11.4	25.2	12.7		3.0
Santa Rosa	CA	14.6	23.7	15.8	3.2	2.7
Stockton	CA	18.7	21.2	12.0	5.2	5.9
Ventura	CA	23.7	22.9	17.5	7.2	4.7
Boulder	CO	15.8	24.9	16.2		2.0
Colorado Springs	CO	13.3	20.5	17.0	1.9	1.3

Denominators for all rates include fee-for-service beneficiaries only. Rates for screening PSAs and screening mammograms are unadjusted. Other rates are age, sex, and race adjusted.
Blank cells indicate that the number of beneficiaries receiving the service was too small to report the rate.

Appendix Table 3. Areas needing improvement (2012)

HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Denver	CO	15.3	25.4	17.9	2.7	2.9
Fort Collins	CO	17.4	28.5	15.8		2.7
Grand Junction	CO	10.6	21.6	19.4		1.6
Greeley	CO	13.9	25.5	19.0	2.4	2.8
Pueblo	CO	14.2	27.3	21.0		2.1
Bridgeport	CT	18.6	23.9	18.1	5.2	4.1
Hartford	CT	16.6	27.3	16.6	3.2	4.1
New Haven	CT	17.5	24.3	17.1	3.3	3.0
Wilmington	DE	19.3	25.9	20.8	3.9	3.1
Washington	DC	17.1	22.2	13.1	7.0	3.0
Bradenton	FL	22.8	26.5	22.2	5.7	5.0
Clearwater	FL	27.3	28.3	18.7	8.7	4.8
Fort Lauderdale	FL	23.7	28.5	27.3	7.3	6.2
Fort Myers	FL	26.4	33.0	22.3	5.0	5.0
Gainesville	FL	19.8	27.4	20.1	7.3	2.9
Hudson	FL	22.1	30.5	23.2	7.8	5.0
Jacksonville	FL	24.4	27.5	21.2	8.9	4.9
Lakeland	FL	20.7	28.6	20.9	9.2	3.1
Miami	FL	30.0	15.3	19.9	8.0	9.1
Ocala	FL	22.3	34.9	24.7	5.3	2.4
Orlando	FL	23.7	25.7	21.7	6.6	5.6
Ormond Beach	FL	26.2	33.6	22.4	6.5	4.4
Panama City	FL	25.8	24.7	18.1	11.3	2.7
Pensacola	FL	20.5	27.5	18.6	6.4	3.3
Sarasota	FL	25.7	33.4	21.7	4.5	3.6
St. Petersburg	FL	22.7	23.6	16.6	10.9	6.7
Tallahassee	FL	22.8	26.5	16.1	6.6	2.4
Tampa	FL	22.4	20.7	20.4	7.0	5.7
Albany	GA	23.3	28.2	17.1	7.0	2.1
Atlanta	GA	23.3	23.7	20.9	4.9	3.0
Augusta	GA	18.1	26.9	14.2	7.2	3.9
Columbus	GA	22.7	26.6	18.7	6.7	1.8
Macon	GA	23.8	27.2	17.2	7.5	3.0
Rome	GA	21.4	23.2	17.0	5.0	3.1
Savannah	GA	25.6	28.0	20.2	5.0	4.0
Honolulu	HI	21.9	26.2	14.8	2.9	3.4
Boise	ID	15.6	28.1	13.8	2.1	1.4
Idaho Falls	ID	17.7	25.2	14.7		2.5
Aurora	IL	15.6	21.4	21.4		3.8
Blue Island	IL	21.3	21.3	20.1	11.7	5.8
Chicago	IL	18.4	18.9	17.7	10.6	5.5
Elgin	IL	21.5	22.4	24.7	5.8	6.5
Evanston	IL	22.6	30.5	20.8	6.6	3.4

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Appendix Table 3. Areas needing improvement (2012)

HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Hinsdale	IL	19.1	23.3	20.4	6.4	4.6
Joliet	IL	21.1	23.6	20.0	9.8	5.7
Melrose Park	IL	17.9	21.6	20.0	7.5	4.5
Peoria	IL	21.1	24.8	13.6	4.8	3.5
Rockford	IL	17.4	26.4	17.5	5.3	3.0
Springfield	IL	18.9	27.1	12.1	3.5	3.1
Urbana	IL	16.3	27.5	15.2	4.5	3.0
Bloomington	IL	17.2	30.8	12.2		3.7
Evansville	IN	20.0	25.2	16.9	4.7	2.4
Fort Wayne	IN	16.8	21.0	20.4	4.1	2.1
Gary	IN	19.2	19.6	19.4	9.7	4.9
Indianapolis	IN	18.4	22.6	16.0	5.2	3.2
Lafayette	IN	13.6	21.5	15.7		4.4
Muncie	IN	22.5	23.8	13.6		3.5
Munster	IN	21.2	22.1	17.4	12.7	5.9
South Bend	IN	16.8	22.6	17.4	5.5	2.7
Terre Haute	IN	17.3	18.9	14.4		4.5
Cedar Rapids	IA	13.5	29.6	21.3		2.1
Davenport	IA	18.1	24.9	21.1	4.6	2.3
Des Moines	IA	13.6	28.9	21.2	2.3	2.1
Dubuque	IA	20.1	31.8	15.4		1.3
Iowa City	IA	13.8	22.5	17.3		1.9
Mason City	IA	10.9	27.8	25.2		2.0
Sioux City	IA	19.5	25.6	19.3		2.2
Waterloo	IA	15.9	29.6	23.7		1.3
Topeka	KS	23.8	33.6	16.2	4.6	2.0
Wichita	KS	19.1	26.5	16.7	3.4	1.9
Covington	KY	14.0	22.1	18.2	4.3	6.0
Lexington	KY	18.1	19.9	14.4	9.4	3.7
Louisville	KY	18.1	24.6	11.4	5.3	4.4
Owensboro	KY	27.5	28.9	11.9		3.0
Paducah	KY	22.5	26.6	12.9	4.4	2.6
Alexandria	LA	18.3	20.3	16.2	10.6	2.5
Baton Rouge	LA	23.4	20.2	21.2	6.4	3.8
Houma	LA	18.6	19.9	18.2	11.1	5.0
Lafayette	LA	21.7	24.6	18.0	7.1	2.5
Lake Charles	LA	26.5	25.7	18.1	14.2	2.2
Metairie	LA	18.5	22.6	19.3	8.5	3.4
Monroe	LA	19.6	21.6	14.3	11.5	4.4
New Orleans	LA	15.2	22.5	19.1	6.6	3.0
Shreveport	LA	21.3	25.1	13.4	8.8	3.0
Slidell	LA	20.5	21.1	19.0		3.4
Bangor	ME	11.2	30.0	8.6		1.8

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Appendix Table 3. Areas needing improvement (2012)

HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Portland	ME	12.0	28.6	17.1	1.6	1.4
Baltimore	MD	16.9	25.1	18.1	5.3	3.2
Salisbury	MD	18.8	27.4	15.5	3.5	2.8
Takoma Park	MD	17.2	22.7	14.6	6.1	3.9
Boston	MA	17.6	29.3	15.1	3.5	2.3
Springfield	MA	13.5	28.9	14.4	1.9	1.4
Worcester	MA	16.8	26.6	12.9	3.2	2.1
Ann Arbor	MI	22.9	23.8	19.9	7.1	3.5
Dearborn	MI	25.5	21.0	20.6	13.3	5.8
Detroit	MI	23.2	22.0	21.6	8.2	4.3
Flint	MI	29.9	26.6	23.2	6.9	3.0
Grand Rapids	MI	18.5	25.9	21.7	2.8	2.8
Kalamazoo	MI	18.4	26.4	16.0	2.5	1.2
Lansing	MI	24.4	23.9	19.1	3.4	1.7
Marquette	MI	16.2	25.6	11.2		1.2
Muskegon	MI	20.6	31.0	21.7		2.7
Petoskey	MI	19.5	28.4	18.5		2.5
Pontiac	MI	24.7	22.9	22.7	5.9	3.4
Royal Oak	MI	24.3	25.0	23.2	7.9	5.7
Saginaw	MI	21.5	26.4	20.0	5.7	2.7
St. Joseph	MI	19.3	28.3	18.2		1.8
Traverse City	MI	23.8	27.2	17.7		3.7
Duluth	MN	11.4	23.5	14.8		2.2
Minneapolis	MN	11.7	27.5	14.6	2.8	1.6
Rochester	MN	13.9	28.6	13.6		1.8
St. Cloud	MN	11.4	29.8	12.5		1.4
St. Paul	MN	11.0	22.2	13.7	1.8	1.8
Gulfport	MS	15.8	22.5	17.8		5.1
Hattiesburg	MS	22.1	19.2	14.5	8.2	2.5
Jackson	MS	20.7	22.9	15.6	7.7	2.4
Meridian	MS	13.6	25.2	10.5	6.3	2.7
Oxford	MS	20.5	20.3	15.6		3.0
Tupelo	MS	23.5	21.4	11.3	7.8	2.4
Cape Girardeau	MO	19.4	25.3	16.3	6.0	3.7
Columbia	MO	17.9	26.7	13.3	4.1	3.4
Joplin	MO	19.3	23.5	12.7	3.4	2.6
Kansas City	MO	19.7	25.9	19.0	4.0	3.9
Springfield	MO	19.3	24.6	15.2	3.4	2.1
St. Louis	MO	18.3	24.8	17.6	5.5	3.7
Billings	MT	12.0	25.2	11.1		1.8
Great Falls	MT	19.5	31.5	13.1		2.7
Missoula	MT	13.7	25.9	14.8	2.7	2.0
Lincoln	NE	17.8	27.6	15.2	3.2	1.8

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Appendix Table 3. Areas needing improvement (2012)

HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Omaha	NE	18.5	27.0	17.8	2.7	2.9
Las Vegas	NV	20.4	19.5	20.7	10.4	5.2
Reno	NV	17.4	24.4	10.4	3.5	3.2
Lebanon	NH	10.2	26.6	9.2	1.7	1.4
Manchester	NH	14.6	28.8	16.0	2.1	2.0
Camden	NJ	20.9	22.8	20.3	6.7	6.1
Hackensack	NJ	24.1	19.2	14.3	9.7	3.7
Morristown	NJ	22.8	20.8	15.3	6.4	4.6
New Brunswick	NJ	20.6	23.3	15.7	6.8	6.3
Newark	NJ	20.3	19.6	14.5	10.2	6.4
Paterson	NJ	25.1	20.0	15.0	9.1	4.9
Ridgewood	NJ	25.5	21.6	11.4	10.2	3.8
Albuquerque	NM	12.5	18.6	17.4	2.7	2.4
Albany	NY	16.7	24.6	11.7	3.5	2.2
Binghamton	NY	15.7	23.8	10.6	3.2	2.0
Bronx	NY	19.0	17.7	6.1	7.1	3.6
Buffalo	NY	19.4	21.7	11.1	3.0	2.3
Elmira	NY	13.7	28.9	9.8	3.8	2.0
East Long Island	NY	25.6	20.1	13.5	8.8	3.2
Manhattan	NY	26.0	17.6	8.8	10.4	3.5
Rochester	NY	18.0	25.1	16.5	2.5	2.3
Syracuse	NY	18.1	28.5	7.0	2.7	2.3
White Plains	NY	22.9	23.9	9.0	6.3	3.8
Asheville	NC	16.6	27.4	17.1	1.6	2.4
Charlotte	NC	18.9	22.2	17.9	3.8	3.4
Durham	NC	18.5	25.7	14.7	5.1	3.2
Greensboro	NC	17.6	28.0	16.6	2.5	2.9
Greenville	NC	21.6	30.9	13.3	5.0	3.6
Hickory	NC	20.9	26.3	21.3		3.0
Raleigh	NC	19.6	25.5	15.2	5.4	4.5
Wilmington	NC	23.7	29.8	18.0	3.9	1.8
Winston-Salem	NC	21.3	28.1	15.2	2.4	2.6
Bismarck	ND	23.3	30.2	8.8		1.1
Fargo/Moorhead MN	ND	16.6	32.0	9.6	4.0	1.5
Grand Forks	ND	15.0	30.8	7.4		1.2
Minot	ND	18.4	34.8	10.9		1.0
Akron	OH	17.4	23.4	17.0	4.6	3.9
Canton	OH	18.7	21.6	19.4	4.6	4.2
Cincinnati	OH	17.9	24.8	25.7	4.1	3.0
Cleveland	OH	17.8	23.2	20.0	7.8	4.2
Columbus	OH	21.4	23.3	17.4	5.5	3.1
Dayton	OH	16.2	23.1	19.2	7.4	3.8
Elyria	OH	24.2	24.0	20.2	7.5	5.5

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Appendix Table 3. Areas needing improvement (2012)

HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Kettering	OH	18.1	27.0	21.2	4.6	3.6
Toledo	OH	19.1	21.9	20.8	5.6	4.1
Youngstown	OH	20.0	21.6	20.5	9.7	5.0
Lawton	OK	20.2	23.8	13.6		2.2
Oklahoma City	OK	20.5	24.2	16.9	6.4	2.7
Tulsa	OK	18.9	22.3	17.3	4.8	2.9
Bend	OR	14.0	28.1	16.3		1.3
Eugene	OR	15.3	28.3	14.3	2.0	2.1
Medford	OR	15.2	28.2	15.1	1.7	1.6
Portland	OR	13.3	26.0	18.1	1.3	1.3
Salem	OR	13.4	26.7	20.6		2.2
Allentown	PA	19.0	23.4	16.1	6.0	4.5
Altoona	PA	18.2	19.2	14.6		3.2
Danville	PA	19.6	24.1	13.0	4.8	2.8
Erie	PA	16.0	24.0	12.8	4.3	2.3
Harrisburg	PA	19.2	27.1	15.1	4.4	3.3
Johnstown	PA	16.0	18.0	13.3		2.2
Lancaster	PA	15.8	23.4	17.6	3.3	2.8
Philadelphia	PA	21.5	22.3	19.9	5.8	5.8
Pittsburgh	PA	17.8	18.6	16.7	6.0	3.2
Reading	PA	20.3	20.8	14.7	4.7	2.9
Sayre	PA	15.7	25.8	10.9		1.9
Scranton	PA	22.4	21.6	19.4	4.0	2.6
Wilkes-Barre	PA	17.4	19.8	16.9	7.8	2.6
York	PA	20.3	26.7	11.5	5.5	3.0
Providence	RI	18.1	26.8	19.7	3.6	2.0
Charleston	SC	20.7	27.1	16.1	3.3	3.0
Columbia	SC	19.9	29.4	15.9	5.1	3.7
Florence	SC	21.5	26.6	16.4	6.8	3.6
Greenville	SC	21.6	29.9	18.2	3.1	2.7
Spartanburg	SC	20.5	24.8	17.0	2.7	3.5
Rapid City	SD	11.3	26.8	11.0		2.9
Sioux Falls	SD	16.5	30.4	14.7	2.0	1.5
Chattanooga	TN	22.0	26.8	16.7	5.1	2.4
Jackson	TN	19.3	19.0	12.1	5.0	6.0
Johnson City	TN	15.8	24.6	13.6	5.4	3.6
Kingsport	TN	16.9	21.7	15.8	7.5	4.3
Knoxville	TN	24.1	26.3	12.9	5.7	2.8
Memphis	TN	20.3	17.8	16.7	6.6	3.6
Nashville	TN	20.8	21.5	13.6	5.4	3.6
Abilene	TX	21.0	22.6	22.0	3.7	3.4
Amarillo	TX	15.5	24.4	20.9	2.0	1.9
Austin	TX	20.7	23.9	20.9	4.4	3.5

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HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Beaumont	TX	23.9	23.1	19.4	6.0	4.0
Bryan	TX	21.4	24.8	17.0	5.9	3.9
Corpus Christi	TX	21.5	23.7	19.1	7.6	2.6
Dallas	TX	21.3	23.7	18.3	6.6	3.6
El Paso	TX	18.7	17.2	16.9	6.4	3.8
Fort Worth	TX	20.2	24.3	23.0	6.7	3.7
Harlingen	TX	21.5	16.3	19.3	10.4	4.8
Houston	TX	18.7	20.1	18.3	9.7	4.4
Longview	TX	20.4	25.0	23.7	7.5	4.3
Lubbock	TX	20.5	19.7	18.0	4.8	3.2
McAllen	TX	22.7	17.1	12.1	10.6	9.1
Odessa	TX	17.9	23.2	22.2	4.8	3.4
San Angelo	TX	19.6	20.9	18.8		4.2
San Antonio	TX	19.1	19.9	17.8	7.3	4.8
Temple	TX	14.9	22.4	20.0	5.5	2.3
Tyler	TX	23.5	26.8	21.6	5.8	4.2
Victoria	TX	19.6	26.0	16.3	3.2	3.6
Waco	TX	17.1	24.0	21.0	3.6	1.9
Wichita Falls	TX	17.4	26.7	22.2	4.9	3.6
Ogden	UT	14.3	25.8	21.4		1.6
Provo	UT	14.3	22.2	19.8		2.0
Salt Lake City	UT	14.3	22.9	17.8	1.3	1.7
Burlington	VT	16.3	29.2	11.0	1.7	1.4
Arlington	VA	18.5	18.8	16.9	4.4	4.1
Charlottesville	VA	15.5	26.3	11.2	3.5	2.6
Lynchburg	VA	14.2	21.9	11.6	2.1	3.1
Newport News	VA	20.2	30.3	15.1	4.0	3.5
Norfolk	VA	17.8	28.6	14.0	4.1	4.3
Richmond	VA	17.5	24.5	17.6	4.9	4.9
Roanoke	VA	16.0	26.1	12.3	4.8	3.9
Winchester	VA	10.8	22.0	12.2	4.4	1.9
Everett	WA	14.9	23.8	13.5		2.0
Olympia	WA	12.9	21.3	12.4		3.1
Seattle	WA	13.6	26.0	13.3	2.5	2.6
Spokane	WA	14.8	27.0	12.9	2.5	1.9
Tacoma	WA	15.3	26.7	14.5	3.4	3.6
Yakima	WA	12.7	22.8	15.8		2.7
Charleston	WV	20.3	21.9	14.6	7.5	4.5
Huntington	WV	19.1	19.6	19.5	6.9	2.3
Morgantown	WV	19.4	21.0	10.9	3.7	4.3
Appleton	WI	12.9	24.3	15.8		1.1
Green Bay	WI	13.0	19.8	15.0	1.7	1.2
La Crosse	WI	12.1	26.0	12.8		1.0

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Appendix Table 3. Areas needing improvement (2012)

HRR name	State	Percent of male beneficiaries age 75 and over having screening PSA	Percent of female beneficiaries age 75 and over having screening mammogram	Percent of decedents enrolled in hospice in the last 3 days of life	Percent of beneficiaries with dementia receiving a feeding tube during the last 6 months of life	Average number of ICU days per decedent during the last 6 months of life
Madison	WI	10.3	19.2	14.3	1.4	1.2
Marshfield	WI	16.1	27.4	11.4	3.0	1.5
Milwaukee	WI	16.5	27.0	19.3	4.1	2.8
Neenah	WI	15.9	27.2	18.0		1.0
Wausau	WI	16.1	27.7	15.9		1.9
Casper	WY	9.9	19.7	10.0		1.6
United States	US	19.5	24.2	16.8	6.0	3.6

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Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Birmingham	AL	25.3	49.5	5.2	15.1
Dothan	AL	27.3	53.9	5.4	14.0
Huntsville	AL	24.4	48.7	4.6	14.8
Mobile	AL	25.0	46.2	4.7	15.0
Montgomery	AL	23.9	53.0	4.9	15.8
Tuscaloosa	AL	24.9	54.0	6.0	14.3
Anchorage	AK	17.0	38.4	3.6	14.7
Mesa	AZ	17.9	55.2	3.5	15.0
Phoenix	AZ	17.8	47.1	3.4	14.6
Sun City	AZ	18.4	60.1	3.4	14.8
Tucson	AZ	17.0	52.5	2.9	15.5
Fort Smith	AR	20.8	43.3	5.4	15.6
Jonesboro	AR	20.4	47.3	5.6	16.4
Little Rock	AR	20.6	49.8	4.9	16.5
Springdale	AR	17.2	50.9	4.3	15.7
Texarkana	AR	23.5	46.1	5.2	17.3
Orange County	CA	20.9	53.9	3.0	15.5
Bakersfield	CA	21.6	43.3	4.5	15.7
Chico	CA	17.8	49.1	3.8	15.2
Contra Costa County	CA	18.2	46.1	3.3	15.4
Fresno	CA	18.9	46.5	3.8	15.6
Los Angeles	CA	21.0	50.6	4.0	16.3
Modesto	CA	19.2	48.3	3.5	15.6
Napa	CA	16.1	45.4	3.3	14.2
Alameda County	CA	16.4	48.6	3.2	16.0
Palm Springs/Rancho Mirage	CA	19.2	49.8	2.9	13.8
Redding	CA	16.1	50.9	3.0	14.0
Sacramento	CA	17.7	49.8	3.0	15.4
Salinas	CA	14.7	51.0	2.8	13.8
San Bernardino	CA	21.2	44.9	4.0	16.2
San Diego	CA	18.2	51.1	3.0	15.7
San Francisco	CA	15.2	45.7	3.0	14.4
San Jose	CA	17.4	48.7	2.6	15.4
San Luis Obispo	CA	16.7	54.2	2.2	13.1
San Mateo County	CA	13.9	55.0	2.2	15.6
Santa Barbara	CA	15.6	54.9	2.3	12.9
Santa Cruz	CA	16.1	53.6	2.6	13.2
Santa Rosa	CA	14.6	50.3	2.4	13.0
Stockton	CA	18.5	49.2	3.7	15.7
Ventura	CA	16.8	51.6	3.0	14.5
Boulder	CO	15.3	56.3	2.6	12.6
Colorado Springs	CO	17.7	46.2	3.1	12.8
Denver	CO	16.0	47.8	3.1	14.6

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Fort Collins	CO	15.6	48.7	3.4	13.3
Grand Junction	CO	14.1	47.6	2.5	12.2
Greeley	CO	16.0	52.1	3.5	14.3
Pueblo	CO	18.4	44.4	3.1	13.9
Bridgeport	CT	13.8	56.3	3.6	14.5
Hartford	CT	15.0	63.2	4.3	15.4
New Haven	CT	15.1	58.0	4.2	16.1
Wilmington	DE	18.7	57.7	4.2	14.6
Washington	DC	16.8	54.3	3.6	16.3
Bradenton	FL	18.5	59.4	3.4	14.6
Clearwater	FL	19.8	62.0	3.8	14.7
Fort Lauderdale	FL	17.6	62.1	3.7	15.8
Fort Myers	FL	16.9	60.4	3.7	15.6
Gainesville	FL	20.2	53.1	5.2	15.8
Hudson	FL	18.5	60.4	5.1	16.5
Jacksonville	FL	22.7	53.0	4.8	16.2
Lakeland	FL	20.0	59.8	4.9	15.8
Miami	FL	22.2	57.5	5.1	17.2
Ocala	FL	18.8	63.4	3.6	14.7
Orlando	FL	19.2	56.9	4.5	15.3
Ormond Beach	FL	20.2	60.1	3.3	14.6
Panama City	FL	22.9	49.6	5.1	15.3
Pensacola	FL	23.9	51.2	4.8	15.9
Sarasota	FL	17.3	61.3	2.5	13.4
St. Petersburg	FL	21.1	56.2	4.4	17.1
Tallahassee	FL	25.0	52.4	4.7	14.6
Tampa	FL	20.7	55.7	4.4	16.6
Albany	GA	24.5	49.4	4.7	15.1
Atlanta	GA	21.9	51.7	3.9	15.1
Augusta	GA	24.3	50.7	3.9	15.0
Columbus	GA	25.5	50.5	3.7	15.3
Macon	GA	24.9	48.4	5.4	15.5
Rome	GA	26.3	48.9	5.0	14.7
Savannah	GA	23.0	54.9	4.3	15.1
Honolulu	HI	21.1	61.8	2.6	13.1
Boise	ID	16.3	46.7	2.8	14.0
Idaho Falls	ID	16.3	41.2	2.8	12.3
Aurora	IL	15.6	59.2	4.6	16.6
Blue Island	IL	14.9	49.3	4.7	17.0
Chicago	IL	16.4	45.3	4.5	17.1
Elgin	IL	16.7	53.5	4.7	14.9
Evanston	IL	13.9	60.5	3.4	15.4
Hinsdale	IL	15.0	58.6	3.9	14.6

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Joliet	IL	15.2	50.5	5.5	16.5
Melrose Park	IL	14.4	54.1	4.3	16.3
Peoria	IL	17.3	55.8	4.9	16.0
Rockford	IL	15.5	53.8	4.6	15.2
Springfield	IL	17.9	52.9	4.9	15.6
Urbana	IL	17.8	50.1	4.9	15.6
Bloomington	IL	16.7	61.2	3.7	14.9
Evansville	IN	20.6	46.2	5.4	15.2
Fort Wayne	IN	18.0	47.6	4.7	14.2
Gary	IN	17.9	41.4	5.8	16.0
Indianapolis	IN	19.8	45.5	4.6	14.7
Lafayette	IN	18.7	32.3	4.6	15.5
Muncie	IN	19.8	42.0	4.8	13.8
Munster	IN	15.7	47.1	5.8	16.9
South Bend	IN	17.4	49.6	4.2	14.6
Terre Haute	IN	20.2	43.6	5.7	16.6
Cedar Rapids	IA	12.9	65.1	4.6	15.5
Davenport	IA	14.4	60.0	4.0	15.0
Des Moines	IA	14.1	61.4	3.9	15.0
Dubuque	IA	12.5	67.0	3.7	12.4
Iowa City	IA	13.1	55.6	3.8	13.2
Mason City	IA	10.8	55.0	4.0	14.2
Sioux City	IA	12.9	58.4	4.2	14.0
Waterloo	IA	13.9	64.1	3.8	14.5
Topeka	KS	15.4	58.7	4.0	14.2
Wichita	KS	18.2	52.9	4.4	14.6
Covington	KY	22.4	52.8	5.6	16.9
Lexington	KY	25.7	45.4	6.6	16.9
Louisville	KY	23.7	51.7	5.6	15.3
Owensboro	KY	23.1	53.4	4.9	14.2
Paducah	KY	25.2	49.1	6.2	15.9
Alexandria	LA	28.9	45.5	6.9	15.3
Baton Rouge	LA	27.5	51.3	4.2	16.5
Houma	LA	24.3	49.1	5.1	16.5
Lafayette	LA	24.4	43.3	5.2	17.4
Lake Charles	LA	26.3	50.9	5.8	15.8
Metairie	LA	25.9	48.5	5.0	16.2
Monroe	LA	29.1	43.2	7.3	16.0
New Orleans	LA	21.9	46.5	4.2	15.0
Shreveport	LA	25.7	48.0	6.1	15.8
Slidell	LA	25.8	48.5	5.9	17.7
Bangor	ME	16.3	65.5	4.8	15.0
Portland	ME	14.3	63.2	3.6	13.8

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Baltimore	MD	17.9	54.2	4.2	
Salisbury	MD	16.9	62.0	3.9	
Takoma Park	MD	15.2	57.6	3.2	
Boston	MA	12.6	65.7	4.5	15.6
Springfield	MA	13.5	65.7	4.2	14.8
Worcester	MA	12.8	64.0	4.7	15.9
Ann Arbor	MI	14.2	53.9	4.7	15.8
Dearborn	MI	18.8	46.5	6.3	17.7
Detroit	MI	18.7	44.4	5.1	17.1
Flint	MI	19.4	52.4	4.8	15.7
Grand Rapids	MI	14.1	59.5	3.7	14.3
Kalamazoo	MI	14.6	52.2	4.2	13.7
Lansing	MI	16.1	53.3	4.3	15.3
Marquette	MI	12.9	54.3	3.8	14.8
Muskegon	MI	15.6	66.1	2.7	12.2
Petoskey	MI	12.6	53.3	3.8	12.0
Pontiac	MI	15.8	50.1	4.9	16.9
Royal Oak	MI	16.2	52.6	4.7	17.7
Saginaw	MI	15.2	53.6	4.7	15.5
St. Joseph	MI	15.1	52.9	3.8	13.3
Traverse City	MI	13.3	55.7	3.6	13.6
Duluth	MN	12.1	57.0	3.2	15.7
Minneapolis	MN	11.9	59.1	3.4	14.9
Rochester	MN	9.8	63.6	3.6	14.0
St. Cloud	MN	11.6	66.6	3.9	14.3
St. Paul	MN	13.1	59.6	3.1	15.6
Gulfport	MS	22.7	42.2	5.4	16.7
Hattiesburg	MS	25.6	46.6	5.8	16.1
Jackson	MS	22.8	44.6	5.6	16.0
Meridian	MS	24.5	43.1	5.6	14.8
Oxford	MS	23.1	48.4	5.1	15.8
Tupelo	MS	23.2	54.0	5.0	14.5
Cape Girardeau	MO	21.1	46.4	5.0	16.0
Columbia	MO	16.8	53.1	4.7	15.5
Joplin	MO	19.4	46.1	5.3	15.6
Kansas City	MO	17.4	54.8	4.5	15.4
Springfield	MO	20.6	55.0	4.1	15.5
St. Louis	MO	17.7	52.5	4.7	15.9
Billings	MT	14.0	46.7	3.6	14.1
Great Falls	MT	14.2	45.8	4.1	14.6
Missoula	MT	14.0	48.6	3.1	13.6
Lincoln	NE	13.8	51.2	4.1	14.3
Omaha	NE	14.4	56.4	4.1	15.2

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Las Vegas	NV	18.6	47.6	3.8	16.5
Reno	NV	16.0	45.0	3.6	14.2
Lebanon	NH	12.6	56.3	3.3	13.6
Manchester	NH	14.2	65.2	3.8	14.8
Camden	NJ	17.3	56.8	4.7	16.2
Hackensack	NJ	15.9	58.5	4.0	15.6
Morristown	NJ	15.2	55.9	3.8	16.1
New Brunswick	NJ	15.6	57.0	3.9	16.2
Newark	NJ	16.7	49.9	4.1	16.2
Paterson	NJ	17.4	53.7	4.3	15.6
Ridgewood	NJ	15.0	62.0	3.7	15.0
Albuquerque	NM	16.8	37.2	3.4	13.5
Albany	NY	13.7	59.1	4.0	15.2
Binghamton	NY	14.7	51.8	4.5	16.3
Bronx	NY	17.2	48.4	4.6	16.5
Buffalo	NY	13.5	56.6	3.8	15.4
Elmira	NY	15.9	58.6	5.4	16.2
East Long Island	NY	14.8	60.1	4.2	16.2
Manhattan	NY	16.7	58.3	4.1	16.6
Rochester	NY	16.9	53.3	3.9	15.7
Syracuse	NY	14.6	61.3	4.5	15.2
White Plains	NY	14.6	58.9	3.9	15.3
Asheville	NC	20.5	54.4	3.5	13.1
Charlotte	NC	21.2	59.2	4.0	15.1
Durham	NC	20.5	56.0	4.1	15.2
Greensboro	NC	20.7	55.9	4.2	15.3
Greenville	NC	21.7	55.3	4.2	15.4
Hickory	NC	21.5	59.4	3.6	14.2
Raleigh	NC	21.1	57.9	4.3	14.8
Wilmington	NC	22.9	64.5	4.1	14.9
Winston-Salem	NC	22.4	57.5	4.9	15.6
Bismarck	ND	13.1	56.8	4.1	14.6
Fargo/Moorhead MN	ND	13.4	61.0	3.8	14.4
Grand Forks	ND	13.8	57.2	4.5	15.5
Minot	ND	10.9	54.6	3.9	15.0
Akron	OH	17.6	50.8	5.4	15.7
Canton	OH	18.7	55.5	4.4	15.0
Cincinnati	OH	20.9	52.8	4.6	15.8
Cleveland	OH	14.8	51.6	5.0	16.7
Columbus	OH	18.9	50.3	5.2	16.1
Dayton	OH	19.3	47.2	4.7	15.3
Elyria	OH	17.8	50.8	6.0	15.2
Kettering	OH	21.2	52.7	3.9	16.2

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Toledo	OH	16.4	46.8	5.2	15.5
Youngstown	OH	17.5	47.2	5.0	15.9
Lawton	OK	26.9	41.9	4.6	15.3
Oklahoma City	OK	23.8	48.4	4.9	15.7
Tulsa	OK	22.5	44.9	4.8	15.4
Bend	OR	17.6	54.1	2.5	11.7
Eugene	OR	17.6	54.3	2.9	13.6
Medford	OR	16.6	50.7	3.1	13.9
Portland	OR	16.7	54.4	3.1	14.4
Salem	OR	17.5	57.0	2.4	14.1
Allentown	PA	14.2	55.9	4.8	15.5
Altoona	PA	16.5	54.2	4.8	15.3
Danville	PA	14.9	59.2	3.9	13.8
Erie	PA	15.0	54.4	4.3	14.0
Harrisburg	PA	16.2	57.1	3.8	15.1
Johnstown	PA	15.7	47.7	5.3	17.8
Lancaster	PA	15.3	61.6	3.9	13.4
Philadelphia	PA	16.5	56.3	4.4	15.8
Pittsburgh	PA	14.8	47.8	5.2	16.0
Reading	PA	14.7	58.3	4.3	15.1
Sayre	PA	14.7	51.3	5.6	17.3
Scranton	PA	15.2	54.7	5.2	14.3
Wilkes-Barre	PA	16.2	54.8	4.6	15.7
York	PA	14.9	63.3	3.5	14.0
Providence	RI	13.8	61.7	4.1	15.5
Charleston	SC	20.1	54.5	3.7	15.6
Columbia	SC	20.9	53.4	3.6	14.8
Florence	SC	22.8	44.2	5.0	15.2
Greenville	SC	22.3	56.1	3.8	14.3
Spartanburg	SC	21.8	54.6	4.8	15.5
Rapid City	SD	12.8	47.6	3.6	12.3
Sioux Falls	SD	10.5	56.6	4.0	14.4
Chattanooga	TN	23.8	49.4	4.6	14.7
Jackson	TN	25.5	52.4	5.3	16.1
Johnson City	TN	23.4	51.6	5.6	16.5
Kingsport	TN	22.4	49.9	7.0	17.5
Knoxville	TN	24.2	53.0	5.0	15.7
Memphis	TN	23.3	46.4	4.8	16.2
Nashville	TN	24.1	51.9	5.7	16.3
Abilene	TX	23.4	45.7	5.0	14.9
Amarillo	TX	19.3	49.8	4.5	14.4
Austin	TX	19.5	55.8	4.0	14.5
Beaumont	TX	23.6	51.5	5.0	15.6

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Bryan	TX	20.0	48.9	4.6	15.2
Corpus Christi	TX	24.5	51.7	5.3	15.6
Dallas	TX	21.9	53.5	4.4	15.5
El Paso	TX	20.3	47.1	3.9	15.3
Fort Worth	TX	24.1	53.3	4.5	15.1
Harlingen	TX	18.8	56.3	4.2	15.2
Houston	TX	22.6	48.8	4.5	15.7
Longview	TX	22.7	50.0	4.8	15.2
Lubbock	TX	22.1	45.2	5.1	14.6
McAllen	TX	24.0	54.6	4.9	16.5
Odessa	TX	18.9	41.8	4.8	14.5
San Angelo	TX	22.1	53.7	4.3	14.4
San Antonio	TX	20.9	49.6	4.0	15.2
Temple	TX	20.5	53.2	4.3	16.7
Tyler	TX	22.3	55.0	4.7	15.3
Victoria	TX	19.9	50.9	5.8	14.7
Waco	TX	23.6	50.4	4.1	16.3
Wichita Falls	TX	24.5	50.5	5.0	16.0
Ogden	UT	17.0	51.6	2.3	12.7
Provo	UT	20.4	47.5	2.9	13.0
Salt Lake City	UT	16.3	45.7	2.8	13.3
Burlington	VT	14.8	58.4	4.1	15.1
Arlington	VA	17.6	53.7	3.1	15.1
Charlottesville	VA	15.6	59.4	3.9	15.1
Lynchburg	VA	20.4	60.1	4.1	15.1
Newport News	VA	19.1	61.9	3.1	14.5
Norfolk	VA	19.9	57.8	3.7	14.4
Richmond	VA	19.3	57.4	4.0	15.8
Roanoke	VA	20.1	56.2	4.7	15.3
Winchester	VA	17.0	52.2	5.3	15.6
Everett	WA	18.2	56.1	2.7	13.8
Olympia	WA	19.3	44.1	2.9	15.5
Seattle	WA	16.2	54.6	2.6	14.3
Spokane	WA	17.0	53.3	2.9	14.1
Tacoma	WA	19.2	51.1	3.7	14.7
Yakima	WA	16.4	52.7	3.9	15.1
Charleston	WV	21.9	46.6	6.2	17.5
Huntington	WV	23.5	47.0	6.6	15.8
Morgantown	WV	17.2	49.6	5.6	16.4
Appleton	WI	12.2	62.8	3.2	13.1
Green Bay	WI	11.6	58.7	3.2	14.7
La Crosse	WI	11.4	60.8	3.7	13.3
Madison	WI	14.5	59.6	3.5	13.8

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 4. Areas showing progress (2012)

HRR name	State	Percent of beneficiaries filling prescriptions for high-risk medications	Percent of diabetic beneficiaries age 65-75 receiving recommended tests	Percent of beneficiaries admitted for an ambulatory care-sensitive condition	Percent of beneficiaries readmitted within 30 days following medical discharge
Marshfield	WI	12.6	63.0	4.1	14.4
Milwaukee	WI	13.7	56.3	4.0	14.9
Neenah	WI	13.0	63.2	3.4	14.9
Wausau	WI	11.9	60.7	3.7	13.1
Casper	WY	14.6	32.0	4.1	15.7
United States	US	18.4	53.2	4.2	15.5

Denominators for all rates include fee-for-service beneficiaries only. Testing rates for beneficiaries with diabetes are unadjusted. Other rates are age, sex, and race adjusted.
Readmission rates for Maryland HRRs have been suppressed.

Appendix Table 5. Interactions with the health care system among older adults with multimorbidity and dementia (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*		Average number of contact days with the health care system per beneficiary		Average number of inpatient days per beneficiary		Average number of unique clinicians seen per beneficiary		Percent of beneficiaries whose predominant provider was a primary care physician		Percent of beneficiaries filling prescriptions for high-risk medications	
		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Birmingham	AL	52,314	25,667	29.7	26.3	16.8	22.4	4.3	3.4	66.5	73.5	33.4	31.1
Dothan	AL	10,956	4,936	30.0	25.9	16.3	21.0	4.4	3.5	67.8	70.6	36.5	35.1
Huntsville	AL	15,246	7,062	30.1	25.7	16.7	21.9	4.8	3.7	64.7	70.9	31.7	29.9
Mobile	AL	15,793	7,721	31.1	26.8	15.8	20.3	5.1	4.2	52.8	57.1	35.4	35.6
Montgomery	AL	9,568	5,713	31.0	27.2	15.0	17.6	4.5	3.8	66.3	68.7	32.2	30.4
Tuscaloosa	AL	6,854	3,432	30.8	28.1	16.8	20.7	4.7	4.0	65.7	67.8	32.9	31.3
Anchorage	AK	7,213	3,709	26.9	19.9	11.5	10.0	4.4	3.3	59.0	64.2	24.9	22.8
Mesa	AZ	14,896	5,422	37.1	30.8	11.7	13.3	5.9	4.7	59.0	65.5	24.0	22.5
Phoenix	AZ	44,103	16,454	34.6	28.8	12.9	16.2	5.4	4.3	57.8	66.7	25.9	23.9
Sun City	AZ	9,378	4,192	38.6	33.4	10.2	12.4	6.0	5.1	56.7	67.5	25.2	22.6
Tucson	AZ	15,934	6,359	33.8	27.2	11.8	13.7	5.2	4.1	58.9	63.6	24.6	21.6
Fort Smith	AR	8,758	4,018	28.6	25.1	18.9	25.0	3.6	2.9	66.5	71.9	30.8	27.4
Jonesboro	AR	6,243	3,467	28.6	25.4	18.9	23.0	4.0	3.2	78.5	83.3	28.8	24.8
Little Rock	AR	40,479	18,895	30.1	26.7	16.9	22.8	4.2	3.3	65.2	75.0	29.5	28.8
Springdale	AR	9,568	4,476	31.0	27.3	16.5	23.4	4.5	3.5	60.3	63.1	26.0	25.6
Texarkana	AR	7,665	3,625	29.0	27.4	19.2	25.9	4.1	3.5	59.2	60.9	34.3	36.2
Orange County	CA	37,190	16,670	39.0	34.3	15.9	21.4	5.2	4.3	55.5	66.8	28.0	28.1
Bakersfield	CA	15,278	5,789	32.9	28.1	14.0	19.4	4.3	3.5	63.8	72.2	29.0	28.4
Chico	CA	8,781	3,106	28.8	23.3	14.7	20.2	4.6	3.6	67.1	75.0	25.9	23.0
Contra Costa County	CA	10,656	4,981	32.5	25.9	15.0	18.1	4.9	3.7	60.6	72.6	24.6	20.9
Fresno	CA	16,226	7,376	31.6	25.6	14.6	18.4	4.5	3.5	65.6	75.0	25.9	25.3
Los Angeles	CA	119,381	54,678	38.7	36.9	19.6	27.9	4.8	4.2	59.7	67.4	28.2	27.3
Modesto	CA	14,221	5,180	30.0	23.9	13.6	17.0	4.4	3.4	68.8	77.1	27.7	24.5
Napa	CA	5,633	2,354	28.7	23.1	15.3	18.2	4.2	3.3	67.1	74.6	23.7	24.9
Alameda County	CA	14,210	6,769	32.8	27.3	17.6	21.3	4.5	3.6	59.0	68.6	23.1	20.3
Palm Springs/Rancho Mirage	CA	7,163	2,935	37.1	30.8	12.6	15.5	5.6	4.6	52.8	64.4	26.2	26.1
Redding	CA	8,478	3,581	31.0	24.1	15.2	17.9	4.2	3.2	67.6	76.7	25.4	23.5
Sacramento	CA	32,782	14,523	30.6	24.5	13.1	15.6	4.5	3.6	69.7	77.1	25.9	23.5
Salinas	CA	7,100	3,322	31.4	23.4	13.1	15.1	4.7	3.5	63.4	77.5	21.0	21.0
San Bernardino	CA	25,162	9,279	34.0	30.7	16.3	23.1	4.4	3.6	63.9	73.5	28.2	26.1
San Diego	CA	41,029	17,189	33.9	29.4	15.3	20.3	4.9	3.9	61.5	71.9	25.9	25.1
San Francisco	CA	16,014	8,441	31.5	26.5	16.4	17.4	4.5	3.6	66.0	74.4	21.2	19.5
San Jose	CA	17,147	7,838	32.3	26.1	14.9	17.8	4.8	3.7	58.4	68.2	23.9	21.3
San Luis Obispo	CA	5,133	2,649	34.6	28.6	10.8	11.8	4.5	3.6	67.8	74.8	24.7	19.6
San Mateo County	CA	7,842	3,432	31.7	23.9	12.3	13.9	5.2	3.9	57.2	69.4	21.1	19.8
Santa Barbara	CA	8,087	3,830	32.9	25.6	10.2	11.8	4.9	3.8	62.8	70.9	22.0	20.1
Santa Cruz	CA	4,484	1,785	33.1	24.0	11.8	14.5	5.2	3.7	58.6	76.4	23.8	21.0
Santa Rosa	CA	6,368	3,192	32.5	25.7	14.2	16.0	4.4	3.3	63.4	74.4	22.0	22.8
Stockton	CA	7,704	3,015	29.4	24.4	16.8	21.8	4.3	3.4	66.9	76.3	26.4	24.4
Ventura	CA	13,068	6,256	37.3	32.0	12.8	15.6	5.2	4.3	53.5	63.2	22.7	22.2
Boulder	CO	2,651	1,653	34.7	27.9	18.2	19.3	5.5	4.2	58.3	69.7	24.1	23.0

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Appendix Table 5. Interactions with the health care system among older adults with multimorbidity and dementia (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*		Average number of contact days with the health care system per beneficiary		Average number of inpatient days per beneficiary		Average number of unique clinicians seen per beneficiary		Percent of beneficiaries whose predominant provider was a primary care physician		Percent of beneficiaries filling prescriptions for high-risk medications	
		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Colorado Springs	CO	11,776	5,560	28.4	23.9	14.5	16.9	4.5	3.6	64.1	71.7	25.8	25.2
Denver	CO	24,926	13,494	33.0	28.6	16.7	18.7	5.0	4.1	63.1	68.2	23.6	21.5
Fort Collins	CO	4,874	2,609	32.4	27.0	18.8	21.1	5.2	4.1	59.4	68.5	25.4	22.6
Grand Junction	CO	3,551	1,969	25.5	18.8	12.4	11.8	4.2	3.2	74.2	79.3	23.5	22.8
Greeley	CO	5,642	3,225	28.1	23.8	17.7	20.0	4.9	4.0	64.8	72.3	23.2	23.1
Pueblo	CO	3,472	1,483	27.3	22.2	16.5	23.2	4.3	3.2	76.1	82.6	30.7	26.5
Bridgeport	CT	11,922	6,670	39.9	34.8	20.1	24.4	6.0	5.0	51.9	59.1	20.8	19.7
Hartford	CT	33,696	19,448	35.4	32.1	21.7	27.0	5.5	4.8	55.2	59.0	20.6	19.7
New Haven	CT	33,990	17,353	37.8	34.5	20.2	25.9	5.9	5.1	52.2	57.9	20.2	18.8
Wilmington	DE	18,965	8,357	36.3	34.2	16.5	23.4	5.3	4.4	64.9	72.9	25.3	24.5
Washington	DC	50,799	25,122	33.8	29.8	16.1	20.2	5.3	4.4	58.2	64.6	23.6	23.0
Bradenton	FL	9,478	3,822	39.6	34.3	15.9	22.9	5.6	4.4	55.4	64.8	27.0	24.9
Clearwater	FL	14,503	6,478	37.2	34.5	16.2	23.8	5.7	4.7	56.7	65.5	27.5	26.3
Fort Lauderdale	FL	63,754	26,947	43.9	39.2	14.5	20.4	6.6	5.5	49.4	57.8	23.6	22.5
Fort Myers	FL	38,770	15,426	39.7	35.8	14.2	20.4	6.1	5.1	58.4	62.4	23.0	24.1
Gainesville	FL	14,581	5,902	35.0	34.6	17.7	25.7	4.9	4.1	70.5	75.7	27.4	27.2
Hudson	FL	15,437	5,579	35.6	34.1	14.2	23.8	5.0	4.3	60.2	66.7	24.9	25.7
Jacksonville	FL	37,219	16,842	37.6	35.9	17.4	23.7	5.6	4.8	62.9	70.6	30.5	30.1
Lakeland	FL	8,412	3,586	37.0	35.3	17.0	25.6	5.3	4.6	65.0	68.5	27.2	27.3
Miami	FL	48,538	22,588	38.3	36.1	16.7	23.2	5.3	4.4	53.9	59.4	28.7	27.7
Ocala	FL	26,151	9,032	36.0	33.6	12.6	19.4	5.5	4.8	57.2	60.2	23.7	25.1
Orlando	FL	92,048	36,001	38.0	36.3	15.6	23.7	5.6	4.9	57.5	62.3	25.6	25.2
Ormond Beach	FL	11,706	5,146	36.5	32.7	14.0	19.4	5.3	4.4	65.7	72.8	29.0	28.0
Panama City	FL	6,911	2,954	36.4	35.1	16.6	23.8	5.0	4.3	65.2	62.0	30.6	29.1
Pensacola	FL	21,522	8,756	31.3	27.5	15.2	20.5	5.0	4.0	59.5	57.7	32.3	33.4
Sarasota	FL	16,793	6,953	38.7	33.6	13.4	18.7	6.0	4.9	50.7	59.7	24.9	24.5
St. Petersburg	FL	10,014	5,041	39.2	36.0	19.8	26.7	5.3	4.2	55.7	62.0	30.8	30.9
Tallahassee	FL	15,339	7,080	31.3	27.6	16.1	20.7	4.6	3.5	70.3	76.9	34.4	32.7
Tampa	FL	23,091	11,406	37.2	35.2	17.0	23.5	5.4	4.6	60.1	64.3	28.8	31.0
Albany	GA	4,269	2,077	28.4	22.7	13.1	14.8	4.6	3.5	69.5	72.9	34.5	31.6
Atlanta	GA	88,632	39,397	31.2	25.6	14.6	19.4	5.2	4.0	56.5	66.0	29.9	27.9
Augusta	GA	12,397	5,903	29.4	24.2	17.5	22.4	4.5	3.5	62.2	67.9	32.6	31.3
Columbus	GA	7,456	2,827	31.9	27.9	11.5	16.1	4.8	3.9	68.5	69.7	35.0	32.4
Macon	GA	16,712	6,764	31.3	26.5	14.5	19.8	4.7	3.5	69.5	78.7	32.9	31.8
Rome	GA	7,571	3,316	29.7	26.3	16.5	23.1	4.7	3.5	70.0	74.5	36.6	31.4
Savannah	GA	16,167	7,822	32.3	26.4	16.1	20.5	5.0	3.9	59.4	67.9	32.5	32.1
Honolulu	HI	14,463	7,854	31.6	24.4	13.6	14.8	4.4	3.4	66.9	73.8	25.7	20.1
Boise	ID	10,015	4,729	25.7	19.3	14.9	16.0	4.7	3.4	63.7	69.3	21.8	23.1
Idaho Falls	ID	2,836	1,109	27.2	21.9	13.8	18.0	4.7	3.5	50.6	68.0	23.3	22.1
Aurora	IL	4,767	2,058	36.0	32.9	19.4	26.4	5.5	4.4	64.9	71.7	22.9	21.2
Blue Island	IL	22,505	9,325	36.7	34.9	20.4	29.5	4.8	4.1	60.3	65.6	20.4	18.3

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HRR name	State	Fee-for-service Medicare beneficiaries*		Average number of contact days with the health care system per beneficiary		Average number of inpatient days per beneficiary		Average number of unique clinicians seen per beneficiary		Percent of beneficiaries whose predominant provider was a primary care physician		Percent of beneficiaries filling prescriptions for high-risk medications	
		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Chicago	IL	44,681	19,692	36.2	35.4	20.2	28.3	4.6	3.9	66.0	70.0	22.4	20.2
Elgin	IL	14,867	6,373	36.4	34.3	20.0	26.7	5.0	4.2	65.5	71.3	24.1	20.1
Evanston	IL	22,851	12,039	38.5	34.7	20.0	24.4	5.4	4.4	63.9	71.2	19.8	16.7
Hinsdale	IL	9,196	4,634	36.9	34.8	18.0	23.8	5.5	4.5	61.7	69.9	21.3	20.2
Joliet	IL	16,398	6,656	35.3	34.3	18.9	28.1	5.1	4.1	60.8	69.3	21.2	20.5
Melrose Park	IL	26,504	12,482	36.0	33.9	20.6	27.9	5.0	4.2	64.6	70.7	20.3	19.0
Peoria	IL	17,141	8,296	29.4	25.0	20.1	27.2	4.3	3.4	65.1	73.1	23.2	23.3
Rockford	IL	17,618	8,402	30.6	26.8	17.8	22.6	4.8	3.8	63.2	66.4	22.3	22.1
Springfield	IL	25,752	11,659	28.3	22.4	20.4	27.6	4.3	3.3	67.4	76.9	24.8	25.6
Urbana	IL	10,191	4,459	28.9	22.4	19.0	22.5	4.6	3.4	65.4	73.1	24.2	24.5
Bloomington	IL	4,050	1,719	30.8	22.2	17.7	21.3	5.0	3.4	67.3	78.7	20.6	18.2
Evansville	IN	18,993	8,075	26.7	22.1	22.2	31.7	4.0	3.1	73.1	81.7	30.2	30.7
Fort Wayne	IN	14,803	7,312	28.0	24.2	17.6	20.7	4.6	3.6	65.1	67.9	25.7	25.0
Gary	IN	15,939	7,575	32.5	30.5	18.5	26.1	4.4	3.7	56.5	63.6	24.1	23.2
Indianapolis	IN	59,265	27,899	30.3	27.6	20.2	25.5	4.9	4.0	59.6	61.9	28.4	28.4
Lafayette	IN	4,836	2,499	29.7	27.4	19.4	22.5	4.8	3.9	68.9	75.6	24.0	27.1
Muncie	IN	4,835	2,069	30.2	28.5	19.5	26.1	4.6	3.7	66.2	67.0	27.6	30.1
Munster	IN	9,480	3,563	35.7	34.5	19.0	29.6	4.8	4.0	53.2	61.9	20.9	18.9
South Bend	IN	14,893	7,601	30.6	26.9	18.8	24.5	4.4	3.5	64.6	72.2	24.1	24.7
Terre Haute	IN	6,018	2,392	30.1	26.7	19.8	29.0	4.3	3.4	57.8	71.8	26.8	33.6
Cedar Rapids	IA	5,647	2,740	30.0	22.8	17.6	21.4	4.6	3.3	61.0	73.5	21.0	18.2
Davenport	IA	12,566	5,256	31.4	24.8	16.4	20.2	4.8	3.5	66.4	72.4	22.9	22.9
Des Moines	IA	23,004	12,023	28.4	22.1	17.8	20.0	4.7	3.4	64.0	70.4	20.8	20.7
Dubuque	IA	2,311	1,113	30.5	21.4	20.0	25.3	4.8	3.4	65.6	77.7	22.5	22.0
Iowa City	IA	6,847	3,282	27.1	21.0	17.6	21.5	4.2	3.0	71.3	77.9	19.5	20.7
Mason City	IA	4,124	1,993	24.2	16.2	19.8	22.5	4.8	3.2	64.8	71.9	15.6	14.2
Sioux City	IA	5,475	2,386	25.3	17.6	15.3	18.1	4.1	2.8	67.3	77.0	19.6	20.5
Waterloo	IA	5,581	2,507	28.1	20.7	16.6	20.1	5.1	3.7	61.4	67.5	22.1	19.3
Topeka	KS	10,630	5,960	30.7	26.2	15.5	18.4	4.9	3.8	69.3	77.6	22.5	22.5
Wichita	KS	31,461	15,061	30.4	24.7	17.1	20.8	4.3	3.4	68.2	72.7	25.2	25.2
Covington	KY	7,502	3,026	32.0	30.5	18.1	23.5	4.8	3.7	60.4	67.3	32.8	35.4
Lexington	KY	37,543	15,495	29.0	27.9	18.2	26.7	4.3	3.6	66.9	69.4	34.8	37.3
Louisville	KY	43,037	18,530	32.3	30.1	20.4	27.6	4.9	4.1	61.0	63.3	33.4	35.1
Owensboro	KY	4,584	1,752	31.1	26.5	16.4	24.1	5.0	3.8	53.4	59.8	29.4	28.8
Paducah	KY	12,683	5,169	30.0	26.6	20.9	32.6	4.7	3.5	65.6	75.2	34.2	37.6
Alexandria	LA	8,330	3,430	29.6	28.2	24.1	37.3	4.0	3.3	62.0	68.8	38.8	39.4
Baton Rouge	LA	14,418	6,861	31.7	28.0	18.1	24.4	5.0	4.1	52.8	58.4	35.1	34.4
Houma	LA	6,263	2,561	30.2	25.5	16.2	22.2	4.6	3.7	50.5	59.1	32.3	30.8
Lafayette	LA	16,102	6,693	31.6	29.5	19.8	29.0	4.3	3.5	58.1	60.6	32.2	30.3
Lake Charles	LA	6,793	2,665	31.8	29.8	19.8	30.3	4.3	3.5	61.0	67.9	35.7	39.8
Metairie	LA	7,524	3,294	33.6	31.2	17.6	26.4	4.9	3.9	43.9	54.8	33.3	33.1

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		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Monroe	LA	7,493	3,366	32.3	30.0	25.4	37.7	4.2	3.4	71.8	76.5	40.3	40.1
New Orleans	LA	7,381	3,198	31.7	30.2	16.6	24.7	4.7	3.8	49.7	55.9	29.2	28.4
Shreveport	LA	18,071	8,030	31.4	28.5	25.7	37.4	4.3	3.3	62.9	71.1	34.5	33.1
Slidell	LA	3,583	1,399	32.3	30.3	15.7	22.8	4.5	3.7	51.9	59.1	33.6	32.6
Bangor	ME	10,848	4,217	23.9	18.7	16.1	18.8	3.7	2.8	62.5	67.6	24.4	24.8
Portland	ME	25,112	11,592	28.7	23.3	15.2	17.3	4.7	3.7	65.2	66.2	20.0	18.3
Baltimore	MD	60,787	30,242	33.9	31.4	16.1	20.6	5.2	4.5	65.1	69.1	24.1	22.9
Salisbury	MD	16,092	5,599	33.8	30.6	14.3	20.2	5.7	4.7	56.3	63.4	23.6	23.5
Takoma Park	MD	14,858	7,551	35.7	31.3	15.4	18.5	5.5	4.6	57.0	64.0	20.9	19.9
Boston	MA	106,175	50,288	35.2	32.3	20.3	26.9	5.3	4.3	58.4	60.8	17.8	17.0
Springfield	MA	17,262	8,152	33.1	29.6	19.2	25.7	5.3	4.2	68.3	70.2	19.4	18.0
Worcester	MA	11,847	5,689	33.2	30.7	19.4	25.1	5.1	4.1	63.6	65.4	18.2	18.6
Ann Arbor	MI	27,496	12,001	34.7	33.3	17.8	23.1	5.2	4.6	68.3	69.9	20.3	20.0
Dearborn	MI	13,743	5,538	37.0	39.8	19.8	31.5	4.6	4.5	73.3	76.2	24.8	23.7
Detroit	MI	46,210	19,634	36.5	36.7	17.5	25.9	5.1	4.8	67.7	73.8	26.1	24.2
Flint	MI	14,354	6,082	35.1	32.7	15.5	20.9	4.9	4.2	72.1	75.3	26.3	24.0
Grand Rapids	MI	17,206	7,745	28.6	24.4	14.9	16.8	4.7	3.7	71.5	75.5	20.8	17.3
Kalamazoo	MI	15,070	6,178	28.8	25.9	15.4	20.2	4.9	4.0	64.0	64.8	19.0	17.9
Lansing	MI	14,290	6,487	30.6	27.8	16.5	21.0	4.8	3.9	69.1	75.2	21.0	19.8
Marquette	MI	5,105	2,284	21.5	16.0	14.4	14.8	3.8	2.8	76.8	87.0	16.7	15.0
Muskegon	MI	5,400	2,601	27.3	23.4	12.9	14.2	4.2	3.6	74.4	79.3	20.4	18.0
Petoskey	MI	4,796	1,865	25.5	19.8	13.5	17.6	4.4	3.3	72.0	77.6	17.9	14.2
Pontiac	MI	9,359	4,108	37.4	35.9	18.2	25.1	5.3	4.8	65.2	73.7	23.3	26.6
Royal Oak	MI	16,971	7,962	39.5	38.3	18.8	25.7	5.6	5.0	64.1	70.1	23.3	22.6
Saginaw	MI	20,312	8,693	29.4	27.1	17.6	24.1	4.2	3.5	71.4	77.7	20.9	18.2
St. Joseph	MI	3,841	1,541	30.9	28.1	13.7	17.9	4.8	4.0	64.6	67.7	22.5	20.5
Traverse City	MI	6,689	2,752	26.1	21.8	14.3	17.2	4.0	3.2	76.7	81.8	18.3	15.0
Duluth	MN	5,801	2,882	25.2	21.0	15.4	16.6	4.4	3.4	66.8	68.9	16.7	17.5
Minneapolis	MN	31,053	15,696	26.6	20.7	15.9	17.5	4.7	3.7	63.1	64.9	17.2	15.7
Rochester	MN	6,777	3,266	26.3	19.4	18.1	19.0	4.9	3.6	62.4	67.5	14.9	12.1
St. Cloud	MN	2,325	967	26.1	18.9	15.8	17.1	4.5	3.4	67.6	75.8	17.1	13.0
St. Paul	MN	9,449	4,975	26.9	21.1	16.5	18.8	4.7	3.8	66.0	65.4	19.3	16.6
Gulfport	MS	4,574	1,934	32.0	29.0	17.5	24.0	4.6	3.7	47.1	52.1	30.6	30.1
Hattiesburg	MS	7,213	3,392	31.1	27.5	16.8	20.6	5.0	4.0	56.3	60.5	33.8	34.0
Jackson	MS	23,499	12,209	31.3	27.9	20.8	26.2	4.2	3.4	59.6	65.3	31.7	31.5
Meridian	MS	5,716	3,185	30.8	27.7	18.1	22.6	4.4	3.7	54.0	58.1	35.4	36.2
Oxford	MS	3,727	1,803	30.0	26.1	19.0	25.8	4.2	3.3	64.2	65.9	29.7	32.5
Tupelo	MS	9,928	4,682	28.9	24.4	18.6	23.9	4.6	3.5	61.5	68.8	31.1	32.7
Cape Girardeau	MO	7,707	3,296	27.0	23.4	22.3	32.8	4.1	3.2	69.0	75.8	30.8	29.0
Columbia	MO	18,159	8,169	27.9	24.4	18.4	25.1	4.3	3.5	64.2	74.6	25.2	24.2
Joplin	MO	10,494	4,832	28.3	25.8	18.3	25.7	4.1	3.2	73.2	83.8	26.9	27.2

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Appendix Table 5. Interactions with the health care system among older adults with multimorbidity and dementia (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*		Average number of contact days with the health care system per beneficiary		Average number of inpatient days per beneficiary		Average number of unique clinicians seen per beneficiary		Percent of beneficiaries whose predominant provider was a primary care physician		Percent of beneficiaries filling prescriptions for high-risk medications	
		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Kansas City	MO	43,087	20,354	30.9	27.6	19.3	24.6	4.7	3.7	67.1	72.5	24.3	24.7
Springfield	MO	18,994	8,516	26.8	23.1	18.0	25.5	4.3	3.3	69.4	76.6	30.4	30.5
St. Louis	MO	79,186	33,874	29.6	27.3	17.5	24.5	4.4	3.6	64.7	71.0	24.0	24.0
Billings	MT	9,887	5,191	24.5	18.2	14.0	14.3	4.3	3.3	62.9	70.3	21.9	19.3
Great Falls	MT	3,083	1,434	26.0	18.2	15.8	15.6	4.3	3.3	59.1	68.8	21.1	20.3
Missoula	MT	6,926	3,449	25.2	18.8	16.1	18.5	4.2	3.3	59.5	71.2	24.1	23.9
Lincoln	NE	13,465	6,441	28.4	21.9	19.3	24.3	4.5	3.4	75.5	81.2	21.6	23.2
Omaha	NE	25,109	12,820	29.1	21.9	19.9	21.7	4.6	3.5	67.6	73.8	22.6	22.0
Las Vegas	NV	27,346	9,217	37.9	35.1	16.3	23.7	4.9	4.2	56.7	64.8	25.8	26.0
Reno	NV	12,059	4,609	29.7	24.7	14.7	17.9	5.0	3.8	59.2	65.5	23.0	21.8
Lebanon	NH	9,271	5,039	22.8	18.1	15.6	16.7	4.4	3.6	65.8	68.1	20.2	19.3
Manchester	NH	19,843	9,998	30.5	26.7	20.2	26.2	5.3	4.4	59.5	59.4	22.2	21.7
Camden	NJ	83,239	35,781	39.5	37.1	16.4	22.1	5.5	4.5	59.0	68.9	22.9	21.9
Hackensack	NJ	28,925	13,893	42.1	39.6	19.7	25.3	5.4	4.6	53.5	64.1	21.9	21.2
Morristown	NJ	21,399	9,809	39.1	35.6	18.3	22.7	5.3	4.4	53.9	68.4	20.2	19.3
New Brunswick	NJ	22,611	10,588	41.5	39.4	17.1	21.9	5.6	4.8	52.5	67.7	20.8	19.3
Newark	NJ	27,969	12,397	38.6	36.4	19.1	25.2	4.8	4.1	56.3	66.4	22.7	21.0
Paterson	NJ	9,147	4,708	40.4	38.2	18.9	24.1	5.2	4.6	59.9	69.7	23.4	21.8
Ridgewood	NJ	9,586	5,337	42.6	39.9	19.1	23.8	5.8	5.0	51.3	62.9	21.1	18.8
Albuquerque	NM	21,403	9,730	27.6	22.5	13.4	15.4	4.7	3.7	62.7	68.5	23.1	22.2
Albany	NY	38,854	18,703	34.0	29.7	17.6	22.2	5.4	4.3	62.1	72.1	20.2	19.4
Binghamton	NY	8,510	3,775	29.3	25.0	15.5	20.4	4.9	3.8	60.4	67.1	18.5	19.5
Bronx	NY	15,388	8,066	41.1	41.0	20.0	24.6	5.5	5.0	62.0	70.5	21.7	17.0
Buffalo	NY	18,694	9,123	29.8	26.3	17.2	23.0	4.7	4.0	65.9	68.1	17.9	17.2
Elmira	NY	8,851	3,957	33.0	29.7	17.6	23.3	5.1	4.1	63.2	68.6	20.5	20.2
East Long Island	NY	96,249	44,844	46.2	44.9	18.4	25.8	5.8	4.9	59.4	70.3	19.7	17.6
Manhattan	NY	82,600	40,347	46.2	43.9	16.6	22.5	5.7	5.0	61.2	69.1	22.2	19.2
Rochester	NY	13,842	7,878	29.9	26.4	16.1	18.2	4.8	4.2	66.7	68.1	22.5	19.8
Syracuse	NY	23,358	11,294	32.9	29.3	16.2	20.2	5.1	4.2	63.3	68.8	19.2	19.1
White Plains	NY	25,223	12,588	41.3	39.9	18.0	24.0	5.6	4.9	55.5	66.2	19.9	19.8
Asheville	NC	17,502	8,536	28.0	24.3	16.1	19.7	5.0	4.1	70.8	70.8	29.2	29.0
Charlotte	NC	49,165	24,307	30.5	25.7	15.0	17.9	5.3	4.4	64.3	68.5	29.7	28.9
Durham	NC	30,776	15,040	29.4	24.5	16.3	19.2	5.3	4.3	65.4	72.5	28.4	27.8
Greensboro	NC	10,475	5,531	29.7	25.7	16.0	19.7	5.1	4.2	64.4	70.8	28.1	25.1
Greenville	NC	23,657	9,573	30.0	24.6	15.2	19.9	4.9	3.9	67.9	73.8	29.8	29.7
Hickory	NC	7,539	3,437	29.3	25.1	13.8	15.9	4.8	4.1	71.3	74.0	29.4	27.9
Raleigh	NC	41,130	16,927	31.6	27.8	16.6	22.2	5.1	4.4	66.0	71.5	28.9	29.5
Wilmington	NC	12,879	5,177	32.9	28.4	15.8	20.9	5.5	4.4	69.1	74.6	31.0	30.9
Winston-Salem	NC	21,791	10,840	30.0	26.7	16.7	20.7	5.0	4.2	65.6	68.5	30.7	30.9
Bismarck	ND	5,239	2,786	26.6	20.4	24.8	31.0	4.7	3.5	58.3	66.3	18.7	18.2
Fargo/Moorhead MN	ND	8,968	4,379	27.0	20.8	19.6	22.3	4.4	3.4	68.2	74.2	19.6	16.5

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Appendix Table 5. Interactions with the health care system among older adults with multimorbidity and dementia (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*		Average number of contact days with the health care system per beneficiary		Average number of inpatient days per beneficiary		Average number of unique clinicians seen per beneficiary		Percent of beneficiaries whose predominant provider was a primary care physician		Percent of beneficiaries filling prescriptions for high-risk medications	
		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Grand Forks	ND	3,013	1,356	25.5	17.7	22.7	30.7	4.5	3.1	63.7	77.0	20.1	16.3
Minot	ND	2,845	1,429	23.4	17.6	16.8	18.6	4.1	3.0	56.8	69.5	14.2	15.5
Akron	OH	11,939	6,024	32.3	31.1	19.5	24.4	4.7	3.9	67.3	70.4	24.9	25.5
Canton	OH	10,965	5,084	32.7	30.4	18.4	22.5	4.5	3.6	72.7	82.5	27.4	26.9
Cincinnati	OH	27,383	12,537	32.0	30.2	17.4	22.2	4.7	3.7	66.9	75.7	30.4	31.6
Cleveland	OH	42,400	21,102	33.9	31.9	20.7	25.5	5.1	4.2	62.9	69.2	20.8	19.6
Columbus	OH	51,034	21,442	29.6	26.8	18.4	22.9	4.6	3.7	71.0	76.5	26.9	27.4
Dayton	OH	21,662	9,052	31.7	28.6	18.6	23.3	4.6	3.7	67.6	75.8	27.7	28.0
Elyria	OH	6,229	2,355	32.3	29.8	19.9	26.9	5.4	4.6	57.8	57.7	24.4	22.8
Kettering	OH	7,657	3,650	34.0	31.8	16.2	19.6	5.0	4.0	63.4	68.5	31.3	30.6
Toledo	OH	20,695	8,229	30.7	27.3	20.0	26.1	4.7	3.8	68.1	73.2	23.7	25.6
Youngstown	OH	13,613	5,775	35.2	33.1	19.0	25.5	4.7	3.7	75.9	78.5	25.1	22.0
Lawton	OK	6,258	2,128	26.4	23.7	13.2	18.8	3.7	3.0	70.7	76.8	33.8	35.3
Oklahoma City	OK	41,392	20,010	29.5	26.3	15.6	19.3	4.1	3.3	64.4	73.1	32.6	33.6
Tulsa	OK	27,277	11,868	30.8	28.2	16.8	22.0	4.2	3.2	73.0	81.3	30.7	32.0
Bend	OR	3,484	1,407	27.9	18.7	7.0	6.1	5.7	4.1	55.0	63.9	26.0	23.4
Eugene	OR	11,042	4,794	26.6	19.2	10.9	10.8	4.3	3.3	68.5	70.2	24.4	21.7
Medford	OR	9,430	4,268	26.8	20.1	11.0	11.5	4.3	3.2	63.7	68.8	24.9	22.5
Portland	OR	24,576	12,047	25.9	19.4	12.8	12.8	4.3	3.2	63.5	69.1	23.9	21.8
Salem	OR	2,561	1,197	28.1	19.3	10.5	9.7	4.2	3.0	64.7	74.1	25.7	18.7
Allentown	PA	31,245	14,592	35.6	33.2	20.5	28.5	5.1	4.4	68.0	75.6	19.4	19.6
Altoona	PA	6,371	2,558	30.3	26.2	18.7	26.9	4.5	3.5	75.6	84.2	24.0	25.8
Danville	PA	11,965	5,281	29.0	27.4	17.4	25.2	4.3	3.6	75.3	79.4	20.2	22.2
Erie	PA	16,225	7,721	30.8	27.4	21.5	29.9	4.2	3.3	75.9	82.4	20.6	20.5
Harrisburg	PA	21,382	9,984	33.1	29.9	18.6	26.0	4.9	3.9	74.4	82.2	22.8	24.6
Johnstown	PA	3,615	1,712	29.4	27.0	21.6	30.7	4.0	3.1	77.2	84.6	22.5	22.4
Lancaster	PA	14,338	7,729	33.4	30.6	19.5	26.1	5.0	4.0	72.7	80.5	23.2	21.3
Philadelphia	PA	73,904	37,510	38.5	35.8	18.0	22.3	5.5	4.5	62.3	72.0	22.4	19.9
Pittsburgh	PA	41,771	20,630	32.4	29.4	20.5	25.7	4.3	3.5	69.1	78.1	20.6	20.3
Reading	PA	13,032	5,644	34.2	31.6	18.9	26.2	4.8	3.8	69.8	78.6	19.8	22.3
Sayre	PA	5,215	2,265	30.8	27.7	19.3	27.8	4.8	3.8	66.7	70.8	20.4	21.7
Scranton	PA	9,194	3,341	33.4	29.2	21.4	31.3	4.2	3.2	73.2	79.8	21.3	22.4
Wilkes-Barre	PA	7,796	3,020	32.2	29.6	20.7	30.3	4.4	3.4	71.4	75.3	21.2	21.5
York	PA	9,733	4,984	31.8	28.7	16.0	21.1	4.8	3.9	78.4	84.5	21.5	21.3
Providence	RI	20,614	10,188	35.4	33.1	18.2	23.2	5.1	4.3	63.6	69.5	18.5	18.0
Charleston	SC	24,470	10,101	32.1	25.9	13.9	17.4	5.2	4.0	64.4	73.1	27.9	27.1
Columbia	SC	26,459	13,050	30.2	24.5	15.9	20.0	4.7	3.7	65.6	74.8	29.0	28.4
Florence	SC	10,320	4,394	27.7	22.6	15.2	19.9	4.0	3.1	75.3	82.5	30.1	28.9
Greenville	SC	19,974	9,505	31.2	26.2	17.2	22.9	5.2	4.1	64.2	68.3	30.1	31.0
Spartanburg	SC	8,388	4,147	30.3	26.6	18.3	24.4	4.7	3.8	66.5	70.7	28.4	28.1
Rapid City	SD	3,951	1,915	27.5	20.9	18.5	21.6	4.2	3.1	68.0	81.0	18.0	16.5

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		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Sioux Falls	SD	16,703	7,846	26.0	19.0	17.7	19.7	4.2	3.0	69.8	79.8	16.7	15.9
Chattanooga	TN	17,139	8,188	30.2	27.3	16.3	22.8	4.9	4.0	57.5	60.6	31.2	29.5
Jackson	TN	11,600	4,731	29.7	25.6	19.1	27.5	4.5	3.5	59.6	65.6	34.5	33.0
Johnson City	TN	5,682	2,528	33.1	31.7	20.7	29.3	5.1	4.5	62.7	60.0	33.7	36.7
Kingsport	TN	11,485	4,691	28.8	26.7	16.2	22.1	4.3	3.7	66.5	66.9	32.3	35.9
Knoxville	TN	30,757	16,147	30.1	27.3	16.9	22.5	4.6	4.0	66.0	67.8	33.4	32.7
Memphis	TN	38,759	18,748	31.4	28.1	18.4	24.2	4.4	3.7	54.5	57.5	31.6	30.1
Nashville	TN	57,182	26,793	30.8	28.4	19.5	27.2	4.6	3.8	62.7	64.8	33.8	33.7
Abilene	TX	7,917	4,238	28.9	23.4	19.4	21.7	3.9	3.1	68.0	73.4	33.7	32.4
Amarillo	TX	9,240	3,948	31.9	26.9	15.9	18.7	4.8	3.9	47.7	54.9	26.5	28.1
Austin	TX	22,767	12,300	36.1	32.3	17.2	21.6	5.4	4.7	48.0	51.0	28.8	28.5
Beaumont	TX	12,464	4,777	31.6	28.9	14.0	20.4	4.4	3.4	61.9	66.6	31.5	31.3
Bryan	TX	4,214	2,106	30.8	27.5	17.5	21.7	4.4	3.4	67.4	75.4	29.7	26.4
Corpus Christi	TX	11,120	5,680	34.0	32.3	18.2	24.6	4.1	3.4	67.7	67.8	32.5	31.3
Dallas	TX	77,557	38,306	34.9	32.6	18.9	24.3	4.9	4.1	59.3	64.5	30.9	30.6
El Paso	TX	17,183	7,600	29.9	25.3	14.0	19.0	4.5	3.5	59.2	65.3	28.2	27.8
Fort Worth	TX	33,694	16,413	36.0	33.8	19.1	24.6	4.7	4.0	62.4	64.2	33.2	33.0
Harlingen	TX	12,198	5,179	34.2	30.1	13.7	19.3	4.6	3.7	72.1	75.9	25.5	25.4
Houston	TX	88,647	44,115	35.7	34.0	18.5	23.5	4.7	3.9	56.4	62.2	31.1	30.8
Longview	TX	5,213	2,591	30.7	27.5	17.0	20.4	4.3	3.5	61.1	62.1	31.7	34.9
Lubbock	TX	14,577	6,245	29.2	26.5	18.3	23.0	4.3	3.4	51.7	53.4	30.7	29.2
McAllen	TX	13,717	6,554	35.6	32.2	15.4	20.3	5.2	4.3	78.9	84.9	32.6	32.7
Odessa	TX	6,251	2,942	29.2	23.4	18.4	22.4	3.9	3.1	60.9	69.5	25.5	26.1
San Angelo	TX	4,343	1,963	29.7	26.6	14.1	18.1	4.8	3.6	56.7	69.6	30.0	32.2
San Antonio	TX	46,346	22,182	34.6	32.5	16.6	21.9	4.8	4.0	59.0	66.6	29.7	30.4
Temple	TX	6,731	2,800	28.8	25.5	17.1	21.1	5.0	4.0	66.5	68.7	27.2	29.9
Tyler	TX	15,773	8,112	31.2	28.6	18.7	23.9	4.5	3.7	66.8	68.8	32.0	31.6
Victoria	TX	4,523	2,081	33.9	32.5	19.4	26.3	4.0	3.1	74.7	81.3	27.1	29.2
Waco	TX	6,718	3,740	26.4	22.2	18.8	21.1	4.2	3.3	66.7	70.7	32.5	37.1
Wichita Falls	TX	6,283	3,005	28.4	24.1	16.6	20.8	4.2	3.5	62.7	69.5	33.1	32.6
Ogden	UT	4,194	1,904	28.9	20.1	13.2	13.6	4.7	3.5	68.1	76.6	27.3	23.2
Provo	UT	3,869	1,749	29.4	22.0	14.5	15.0	4.7	3.6	69.4	78.1	27.8	23.6
Salt Lake City	UT	18,246	8,889	27.0	19.7	14.8	15.2	4.4	3.2	66.2	74.0	24.1	20.0
Burlington	VT	14,553	6,263	26.2	21.1	16.4	19.3	4.4	3.3	69.3	75.4	22.3	21.5
Arlington	VA	25,028	12,770	34.1	26.5	15.3	17.3	5.4	4.1	60.4	67.7	25.7	23.1
Charlottesville	VA	14,091	6,585	27.5	22.5	15.6	18.4	4.9	4.0	70.4	77.6	23.3	23.1
Lynchburg	VA	6,724	3,308	28.6	23.0	16.6	19.3	5.1	4.0	62.9	67.4	31.9	26.6
Newport News	VA	12,826	6,046	32.9	26.8	13.5	17.8	5.6	4.6	61.3	66.7	27.4	29.0
Norfolk	VA	27,999	13,824	31.8	27.3	16.0	20.3	5.4	4.5	64.4	65.7	26.9	26.8
Richmond	VA	35,571	16,447	30.5	24.7	16.8	20.3	4.9	3.8	67.9	75.1	26.8	26.3
Roanoke	VA	19,592	7,728	29.0	25.9	17.8	24.4	4.6	3.8	65.0	71.5	28.9	29.4

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Blank cells indicate that the number of beneficiaries receiving the service was too small to report the rate.

Appendix Table 5. Interactions with the health care system among older adults with multimorbidity and dementia (2012)

HRR name	State	Fee-for-service Medicare beneficiaries*		Average number of contact days with the health care system per beneficiary		Average number of inpatient days per beneficiary		Average number of unique clinicians seen per beneficiary		Percent of beneficiaries whose predominant provider was a primary care physician		Percent of beneficiaries filling prescriptions for high-risk medications	
		Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia	Multiple chronic conditions	Dementia
Winchester	VA	10,596	4,397	27.8	25.7	15.7	21.3	4.3	3.6	70.7	74.6	22.5	24.2
Everett	WA	7,685	3,475	29.1	21.9	14.7	15.6	5.1	3.6	64.8	68.4	24.6	23.8
Olympia	WA	6,377	2,782	27.8	21.0	16.1	18.5	4.3	3.3	64.6	70.6	27.6	26.7
Seattle	WA	36,739	18,876	29.9	22.8	15.6	16.4	5.0	3.7	61.1	68.5	23.3	21.5
Spokane	WA	27,605	13,874	27.9	21.1	13.9	14.8	4.6	3.5	63.1	69.7	24.3	23.7
Tacoma	WA	11,700	4,757	29.4	23.1	16.0	20.3	4.8	3.6	64.9	71.9	24.1	23.1
Yakima	WA	4,935	2,260	27.3	21.3	16.1	18.4	4.5	3.2	70.2	79.3	24.2	25.3
Charleston	WV	23,247	9,134	29.6	27.2	17.0	25.0	4.2	3.3	69.7	74.5	28.6	27.9
Huntington	WV	10,367	3,856	29.8	26.8	16.1	24.0	4.6	3.5	67.4	74.2	31.1	33.3
Morgantown	WV	9,274	3,644	28.6	24.3	16.5	21.6	4.3	3.2	69.5	79.7	22.6	21.8
Appleton	WI	3,924	1,688	26.8	20.0	16.5	18.0	4.4	3.2	61.2	71.0	17.4	17.6
Green Bay	WI	8,954	4,536	25.4	18.6	17.7	19.1	4.4	3.3	61.3	73.0	17.6	16.3
La Crosse	WI	6,200	3,009	27.0	20.0	15.1	17.3	4.6	3.6	68.1	74.0	17.1	17.6
Madison	WI	17,163	8,388	26.5	20.4	16.8	17.9	4.5	3.4	67.1	73.8	22.2	19.8
Marshfield	WI	7,676	3,267	26.2	20.5	15.9	18.6	4.5	3.4	66.6	76.9	18.4	16.4
Milwaukee	WI	46,438	22,606	32.0	27.3	18.1	22.2	4.7	3.6	67.3	75.3	19.9	18.9
Neenah	WI	3,170	1,397	29.0	21.7	15.4	18.7	4.5	3.2	60.4	67.4	17.0	16.4
Wausau	WI	4,565	2,173	25.7	19.9	14.9	17.1	4.6	3.5	66.7	74.0	17.9	17.5
Casper	WY	3,710	1,791	30.3	23.4	17.8	22.4	4.4	3.3	62.7	76.9	22.3	21.1
United States	US	5,738,378	2,640,546	33.2	29.6	17.2	22.5	4.9	4.0	62.8	69.1	25.8	24.9

*Fee-for-service beneficiaries age 65-99. Excludes those enrolled in Medicare Advantage HMOs. Rates are age, sex, and race adjusted.

Blank cells indicate that the number of beneficiaries receiving the service was too small to report the rate.

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A Report of the Dartmouth Atlas Project

The Dartmouth Atlas Project works to accurately describe how medical resources are distributed and used in the United States. The project offers comprehensive information and analysis about national, regional, and local markets, as well as individual hospitals and their affiliated physicians, in order to provide a basis for improving health and health systems. Through this analysis, the project has demonstrated glaring variations in how health care is delivered across the United States.

Founded in 1929 by John and George Hartford of the Great Atlantic & Pacific Tea Company (A&P), **The John A. Hartford Foundation,** based in New York City, is a private, nonpartisan philanthropy dedicated to improving the care of older adults. As 10,000 people turn 65 every day, the largest-ever generation of older adults is living and working longer, redefining later life, and enriching our communities and society. Comprehensive, coordinated, and continuous care that keeps older adults as healthy as possible is essential to sustaining these valuable contributions. The John A. Hartford Foundation believes that its investments in aging experts and innovations can transform how care is delivered, lowering costs and dramatically improving the health of older adults. For more information, visit *www.jhartfound.org.*

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